Fergus and Judith Basin Counties
Remaining Prospects

Final Report
Abandoned Mine Reclamation Project

Robert Peccia & Associates

FINAL REPORT

FERGUS AND JUDITH BASIN COUNTIES REMAINING PROSPECTS ABANDONED MINE RECLAMATION PROJECT

Fergus and Judith Basin Counties

February, 1991

Robert Peccia & Associates, Inc.
Helena, MT

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1. INTRODUCTION

1.1 Site Descriptions

The Fergus and Judith Basin Counties Remaining Prospects project initially included reclamation plans for eleven separate coal mine sites. All but one of the eleven sites (the Larson Mine) had resulting mine spoils and waste rock and debris piles that were affecting natural revegetation. One site was dropped from the plan because consent for entry was denied and one site was added as a Work Directive Change/Change Order. Following is a description of each individual site.

Maxwell Mine Site

The Maxwell Mine is a small coal prospect consisting of one open adit, adit subsidence, the resulting spoils and waste pile (approximately 400 cubic yards) and a small prospect disturbance with an excavated waste pile (approximately 100 cubic yards).

This site is located in Section 20, Township 14 North, Range 18 East, approximately 10 miles southeast of Lewistown, Montana in Fergus County.

Before construction this site posed a serious threat to humans and livestock. The existing adit was found in a wide open condition with loose surrounding soils. Because of the shape of the subsidence, runoff was being diverted directly over the spoils material and was contaminating the soils and vegetation below the site. Although coal was not visible in the waste pile, no plant life was being supported and plant life down slope was dying out.

ABN Mine Site (Abbot/Knepper)

This site, also a coal prospect, consisted of one adit opening and resulting spoils and waste pile of approximately 50 cubic yards.

The mine is located 2.5 miles southeast of Giltedge, Montana in Section 3, Township 15 North, Range 20 East, Fergus County.

Because of the adits proximity to area ranches it posed a threat to humans and livestock. The adit opening, approximately 5 feet in diameter is situated in the face of a sandstone outcropping. The waste pile below the adit was left intact based on landowner consent to perform hand work only.

Shearson No. 1 Mine Sites

This site consisted of six individual coal prospects with one open adit, and approximately 750 cubic yards of coal spoils and waste. Five of the sites were similar in that their respective adits were subsided to the point of closure. There was a subsided shaft above Site No. 5.

All six mines are located in Section 33, Township 16 North, Range 20 East, Fergus County, Montana.

The waste piles from these sites were eroding into adjacent farm fields. Drainage rills had formed directly over the waste piles. Small shrubs were growing near the perimeter of the sites, but no vegetation was growing in the waste piles themselves.

Shearson/Shipley Mine Sites

This site consisted of two closed adits, resulting 700 cubic yard coal spoils and waste pile and one open adit with no spoils or waste. The east and west sites are situated near heavy timber. The pines appeared to be doing well near the perimeter of the waste piles, but no growth was apparent in the waste piles.

These three sites are located in Section 33, Township 16 North, Range 20 East, Fergus County, Montana.

The waste piles from the west and middle sites appeared to be contaminating the soils and vegetation below the sites. The west site adit had been used as a dump site and was full of metal, glass and plastic debris. The east site adit was open and susceptible to further collapse. A large pine was growing directly over the opening. No spoils/waste contamination appeared to have occurred at the east site.

Larson Mine Site

Three open coal adits, with no visible coal spoils or waste, located in the face of nearly solid rock cliffs form the Larson site. Each of the three adits posed a potential hazard to humans. Two of the adits were accessible to livestock. Standing water approximately 2 feet in depth was visible in the middle adit.

The Larson mines are located in Section 3, Township 17 North, Range 8 East, Judith Basin County, Montana.

No apparent contamination had occurred at the mine openings and vegetation at the entrances of each site were normal when compared with the surrounding environment.

Ward Mine Site

The Ward mine consisted of one partially subsided adit and a resulting 400 cubic yard spoils/waste pile. The waste pile was largely coal spoils of a much darker appearance than that found at any other prospect encountered within the scope of this project.

This mine site is located in Section 31, Township 15 North, Range 12 East, Judith Basin County, Montana.

The spoils from this prospect appeared to be eroding downhill and contaminating the vegetation and pines below the waste pile. The needles on approximately 15 affected pine trees at the bottom end of the site had dried out and turned brown.

Benjamin Hill Mine Site

Consisting of one open adit and resulting spoils/waste pile, the Benjamin Hill site was similar to the other prospects encountered throughout this project. The only major difference was the volume of the spoils/waste pile being near 800 cubic yards. The waste pile consisted of a collapsed tipple and dike structure and other miscellaneous wood and metal debris.

This mine is located in Section 35, Township 15 North, Range 20 East, Fergus County, Montana.

The adit at the Benjamin Hill site was approximately eight feet in diameter and open. The site is less than one half mile from the nearest residence and the danger to humans and livestock was obvious. The waste pile was eroding downhill and was nearing Horsethief Creek. An abandoned water well, located near the site, also posed a threat to unsuspecting humans. The landowner was concerned with stock safety near the well.

Visscher Mine Site

Although repeated attempts were made by both the AMRB and RPA, consent for entry to this site was never secured from the landowner, therefore no work was done at the site. The site has two open adits with a combined spoils and waste volume of approximately 100 cubic yards. The site is located on the west border of Section 28 and east border of Section 29, T16N, R20E approximately 1 mile south of Giltedge, Fergus County, Montana.

Peterson Mine Site

The Peterson site consisted of four open adits with resulting spoils and waste piles, one equipment accessible adit with its corresponding waste pile and one shaft partially filled with metal and glass debris. Total spoils volume is approximately 500 cubic yards.

These mines are located in Sections 28 & 33, Township 16 North, Range 20 East, about 1.5 miles south of Giltedge in Fergus County, Montana.

Three of the adits were open and accessible to humans and livestock. One adit was nearly closed and was of questionable concern. The accessible prospect with the waste pile was contaminating trees and farm land soils downhill from the mine.

Gray Mine Site

Two open adits located approximately 150 yards uphill from a ranch home comprised the Gray site. Both adits were open enough to be accessible to humans and livestock and opened into large cavernous holes just below the surface.

These mines are located in Sections 28 & 29, Township 16 North, Range 20 East, about 1/2 mile southwest of Giltedge in Fergus County, Montana.

Because of the proximity of these mines to the adjacent home a potential hazard existed. The larger of the two mines had a spoils/waste pile of approximately 400 cubic yards down slope from the adit, situated on a 35 degree slope. Consent for equipment entry at this site was not obtained, therefore work involved hand closure of the adits only.

Frank Bland Mine Site

The Frank Bland site consisted of three small coal prospects with resulting spoils piles, two open adits and one subsided shaft above the east adit. Total volume was about 450 cubic yards.

These mines are located in Section 30, Township 15 North, Range 19 East, Fergus County, Montana.

The open adits posed a threat to nearby ranches. Each of the three spoils piles were contaminating the surrounding soils and vegetation. The west site spoils were eroding into adjacent Pike Creek.

Boyce/Swanson Mine Site

This site was comprised of one open adit, two subsided shafts, and two coal prospects with resulting spoils. Reclamation efforts had been previously attempted and had only partially succeeded. Initial reclamation efforts had attempted to neutralize the mine spoils and revegetate the sites with the aid of erosion control matting. These efforts were successful on the two flatter slopes, but failed on the two steeper sites (approximately 18 to 20 degrees).

This site is located in Sections 10 & 15, Township 15 North, Range 20 East, Fergus County, Montana.

Problems with the initial reclamation attempt were brought to the attention of the DSL AMRB by area residents. The reclamation plan for this site was added as a Work Directive Change/Change Order.

1.2 Site Maps

Site location maps and individual site maps are shown in Appendix A.

1.3 Project Objectives

The objective of this project was to proceed with reclamation of eleven small abandoned coal mine sites in Judith Basin and Fergus counties in north central Montana. The largest of these sites is less than one half acre in total disturbed area. The most important objective was to perform mine opening closures in a manner that will prevent further subsidence and will eliminate the inherent danger to humans and livestock. Second on the list of objectives was to neutralize the mine wastes and prevent further erosional contamination of the surrounding environment. The third objective of the project works in conjunction with controlling further erosion. Promoting plant growth over the disturbed areas by coversoiling, fertilizing, seeding and mulching to provide protection from erosional forces while increasing site productivity. Site cleanup provides a benefit from a visual standpoint, as well as increased land values.

2. RESPONSIBLE PARTIES

2.1 Contractor

The Fergus and Judith Basin Counties Remaining Prospects Abandoned Mine Reclamation Project contract was awarded to Maddox Construction of Great Falls, Montana. Mel Aamold was the Contractor's construction supervisor.

2.2 & 2.3 Reclamation Plans and Engineering Plans

Reclamation plans (Grant Narrative and budget) as well as contract plans and specifications for this project were prepared by Robert Peccia and Associates of Helena, Montana.

2.4 Quality Control Inspection

Quality control inspection was performed by Robert Peccia and Associates (RPA) of Helena, Montana. Terry Campbell was RPA's primary construction inspector for this project. Alden Beard and Robert Morton provided contract management.

2.5 Abandoned Mine Reclamation Bureau Coordination

John Koerth for the Montana Department of State Lands Abandoned Mine Reclamation Bureau (DSL AMRB) provided coordination through contract completion.

3. CHRONOLOGICAL LISTING OF EVENTS

3.1 Pre-Bid Conference

A pre-bid conference was held May 31, 1990. Alden G. Beard (Project Manager) for Robert Peccia and Associates ran the meeting. John Koerth attended as the Owner representative for the DSL AMRB. Eight contractor representatives attended the conference. A walk through discussion of the scope of work to be performed at each site was presented for the contractors who stayed for the entire conference. Each site was visited during the conference presentation.

3.2 Bid Date

Bids were received until May 15, 1990, at which time bids were opened and read by the DSL AMRB.

3.3 Three Lowest Bids

The seven bids received ranged from $36,768.00 to $80,876.00. The low bid of $36,768.00 was declared invalid due to an unsigned proposal. The Engineer's Estimate was $66,882.50. The three lowest bids for the project are as follows:

Maddox Construction
Great Falls, Montana
$53,439.50

Montgomery Construction
Hilger, Montana
$53,706.00

Sieben Ranch Company
Helena, Montana
$58,229.20

3.4 Contract Award

The contract was awarded to Maddox Construction of Great Falls, Montana.

3.5 Notice of Award

A Notice of Award was issued on June 21, 1990 and accepted on June 29, 1990.

3.6 Notice to Proceed

Notice to Proceed was issued and accepted on July 19, 1990. The Start-Up date was set for July 31, 1990.

3.7 Construction Start-Up

A pre-construction meeting was held and work began on July 31, 1990. Items discussed at the preconstruction meeting were: 1.) Work schedule submittal, 2.) material submittal procedure, 3.) payment schedule and pay requests, 4.) work sequence, 5.) field decisions, 6.) on-site equipment storage, 7.) safety

as sole responsibility of contractor, 8.) progress meetings, 9.) quality control inspection and 10.) DSL site specific comments addressing individual sites and landowners. The pre-construction conference started at 9:00 a.m. and concluded at 12:00 noon. Maddox Construction began work at the Shearson Number 1 site at 1:00 p.m.

3.8 Change Orders

Change Order No. 1 was initialized to rectify all contract quantity changes and to include the additional work involved in Work Directive Change Numbers 1 & 2. This Change Order also shows the change in contract payment for the lime used on the project. Change Order No. 1, the only Change Order in the project, and Work Directive Change No. 1 & 2 are shown in Appendix B. Change Order No. 1 added 26.7 percent of the initial contract price to result in the final project cost. The Change Order in effect is 21.1 percent of final project cost.

3.9 Work Stoppages

A weather day was awarded on 8/20/90 due to heavy overnight rainfall. The site was too moist to access without damaging the adjacent terrain.

Construction progress at the Boyce/Swanson site was held up from 11/1/90 through 11/19/90 to await delivery of native grass sod from Gallatin Valley Sod. The sod supplier was unable to cut the sod because of water system problems and then because of a snowstorm. The cutting equipment apparently wouldn't work on snow covered sod.

After sod delivery and work re-start on 11/19/90, a winter snowstorm stopped progress from 11/21/90 until 12/2/90. The total sod delivery and weather shut-down for the Boyce/Swanson work totaled 30 calendar days.

3.10 Requests For Payment

Three payment requests were granted for this project. Copies of the requests are shown in Section 5, and a breakdown of the requests follow:

Firm	Amount	Date
Maddox Construction	$30,720.60	9/10/90
Maddox Construction	$12,907.12	10/25/90
Maddox Construction	$23,409.85	1/11/91

3.11 Substantial Completion

A Certificate of Substantial Completion was issued on 1/25/91. A copy of the Certificate is in Appendix C.

3.12 Final Completion Approval

Final completion approval was given on 12/8/90. The Contractor had completed all "punch listed" items on 12/8/90 and satisfied the requests of both the Engineer and Owner.

3.13 Final Payment

Final payment was approved to Maddox Construction on 1/11/91 for a total contract amount of $67,037.57. This amount includes deduction of the 1% gross receipts tax.

4. CONSTRUCTION

4.1 Description of Project Plan

The project plan for the Fergus & Judith Basin Counties Remaining Prospects Abandoned Mine Reclamation Project consisted of individual site and work descriptions for each of the eleven sites. The following is a listing of the site work descriptions.

Maxwell Mine (Maxwell/McCollum)

- Removed and reset 25 L.F. of existing fence along road to reach access.
- Prepared adit cut, subsidence and prospect hole for spoil disposal including topsoil salvage and stockpile. Prepared adit cut for closure including exploratory excavation. Closed with riprap (Standard Drawing 410.01).
- Drained adit seepage pond (5'x10'x6"d).
- Excavated spoils and placed in prepared deposition areas (500 C.Y.).
- Graded spoils areas to drain and match adjacent contours.
- Applied and incorporated lime into spoils, areas formerly covered with spoils and devegetated areas designated by Engineer (0.3 Ac.).
- Replaced topsoil and graded on limed areas (8" min.).
- Fertilized, seeded and mulched all disturbed areas (0.4 Ac.).
- Constructed fence (706 L.F.).

ABN Mines (Abbot/Knepper)

- Used existing access road to reach site.
- Prepared open adit at Abbot Mine for closure. Closed adit with hand-placed riprap (Standard Drawing 410.02).

Shearson No. 1 Mines (Stillman)

- Prepared site access, including clearing and grubbing.
- Removed and disposed of debris.
- Prepared adit cuts #1 through #5 for spoils disposal including salvaging and stockpiling topsoil.
- Excavated and explored subsided shaft above adit cut #5. Removed and disposed of garbage, filled using spoils from adit cut #5.
- Closed open adit #6 using hand-placed riprap (Standard Drawing 410.02). No spoils burial at adit #6.
- Excavated a topsoil borrow/spoils disposal area between adit cuts #2 and #3.
- Separated topsoil (A horizon) from cover soil (B horizon), salvaged and stockpiled.
- Excavated and placed spoils in prepared adit cuts and deposition area (approximately 750 C.Y.). Graded spoils to drain and match adjacent contours. Excess spoils from #3 adit was placed in adit cut #2.
- Prepared shaft at adit #5 for closure including exploratory excavation. Closed according to Standard Drawing No. 410.03.
- Applied and incorporated lime to coal spoils, areas formerly covered by spoils and devegetated areas (0.7 Ac.).
- Placed and graded cover/topsoil on limed areas to achieve an 8" minimum depth.
- Seeded and fertilized all disturbed areas including access roads (1 Ac.).
- Constructed new fences (1,795 L.F.).

Shearson & Shipley Mines (Stillman)

- Prepared site access, including clearing and grubbing.
- Removed and disposed of debris. Garbage in west adit cut was compacted thoroughly and buried in place.
- Prepared adit cuts and areas adjacent to spoil piles for spoil deposition including removal and salvage of topsoil. Regraded spoils in place to drain and merge with adjacent contours (700 C.Y.).
- Prepared east adit for closure, including exploratory excavation. Closed with riprap (Standard Drawing 410.01).
- Applied and incorporated lime into all coal spoils, areas formerly covered by spoils and devegetated areas, except the east adit spoils pile (0.5 Ac.).
- Replaced topsoil on limed areas with minimum 8".
- Fertilized, seeded and mulched all disturbed areas including access roads (0.75 Ac.).
- Constructed fence (1,329 L.F.).

Larson Mine (Bodner)

- No equipment access was permitted to cross Williams Creek.
- Closed 3 open adits with hand-placed riprap generated from the site (Standard Drawing 410.02).
- At Middle Adit, removed partial board cover before closing adit.
- No coal spoils required removal or covering at these sites.

Ward Mine

- Used existing access to site.
- Prepared spoils disposal area at west prospect in adit cut, including excavating and salvaging all topsoil and suitable (non-coal) cover material.
- Removed and disposed of debris and collapsed tipple at west prospect.
- Prepared west adit opening for closure including exploratory excavation.
- Disposed of spoils in prepared west adit cut deposition area. Placed all spoils that fit in cut. Graded remaining spoils to drain and match adjacent contours (400 C.Y.).
- Applied and incorporated lime into all coal spoils, areas formerly covered by spoils pile at west prospect. Applied lime at twice specified rate; payment was based on twice measured acreage (0.2 Ac.).
- Placed and graded stockpiled topsoil and cover material to limed areas, adjusting thickness to insure full coverage.
- Fertilized, seeded and mulched all disturbed areas including access trail (0.4 Ac.).
- Constructed a fence around west prospect site (762 L.F.).

Benjamin Hill Mine (Boyce)

- Prepared access as necessary to complete work.
- Prepared open adit for closure including exploratory excavation and topsoil salvage. Closed adit with riprap (Standard Drawing 410.01).
- Filled dug well (approx. 5' dia. x 15' deep) with riprap or clean gravel to ground surface; no spoils allowed in well. Paid as shaft closure bid item.
- Removed and disposed of debris and collapsed tipple.
- Excavated and placed spoils material in prepared adit cut. Graded remaining spoils to drain and match adjacent contours (800 C.Y.).
- Applied and incorporated lime to spoils and areas formerly covered by spoils (0.8 Ac.).
- Generated sufficient topsoil from designated borrow area to cover the limed areas with a minimum of 8". Graded to drain and match contours.

- Fertilized, seeded and mulched all disturbed areas including topsoil borrow area (1 Ac.).
- Installed new fence (577 L.F.).

Visscher Mine

- Two open adits were not closed as per plans because consent for entry was refused by landowner.

Petersen Mine

- Used existing site access. Considerable amount of brush below north, south and east prospects prohibited equipment access; clearing was not allowed.
- Prepared open adits for closure including exploratory excavation. Adits at north, south and east prospects hand closed with riprap (Standard Drawing 410.02). Closed main prospect adit with riprap according to Standard Drawing 410.01.
- Prepared main prospect adit cut and prospect hole for spoils deposition, including salvaging and stockpiling topsoil.
- Placed main prospect spoils in prepared adit cuts. Graded spoils to drain and merge with adjacent contours (500 C.Y.).
- Applied and incorporated lime to coal spoils, areas formerly covered by spoils and devegetated areas at main prospect (0.5 Ac.).
- Excavated a topsoil borrow area to provide additional topsoil.
- Placed topsoil on all limed areas to a minimum depth of 8".
- Seeded, fertilized and mulched all disturbed areas at main prospect, including temporary access roads (0.7 Ac.).
- Constructed new fence (384 L.F.).

Gray Mines

- No equipment access was allowed onto mine sites.
- Prepared open adits #1 and #3 for closure. Closed with hand-placed riprap (Standard Drawing 410.02).

Frank Bland Mines (Burleigh)

- Removed and replaced fence as necessary for access (25 L.F.).
- Removed and disposed of debris at all sites.
- Prepared open adits and collapsed shaft at east and west locations for closure including exploratory excavation and salvaging topsoil. Closed adits with riprap (Standard Drawing 410.01).
- Prepared all adit cuts and shaft for spoils deposition including clearing and grubbing and salvaging topsoil.
- Placed spoils into prepared adit cuts and shaft. Graded to drain and match adjacent contours (450 C.Y.).
- Applied and incorporated lime to all coal spoils, all areas formerly covered by spoils and devegetated areas (0.5 Ac.).
- Regraded salvaged topsoil to an 8" minimum depth on all limed areas. Graded to drain and match local contours.
- Fertilized, seeded and mulched all disturbed areas including site access route to south prospect (0.5 Ac.).
- Installed new fence at all sites (1,008 L.F.).

Boyce/Swanson Site

This site was added per Change Order No. 1 and was not part of the original contract.

- Removed and disposed of debris.
- Performed excavation and embankment work at site access road.
- Applied and incorporated lime to 6" depth (0.32 ac.)
- Procured and placed (1,550 S.Y.) of native grass sod.
- Applied 9,000 gallons of water evenly over placed sod.
- Closed two open shafts per Standard Drawing No. 410.03 and closed one open adit per Standard Drawing No. 410.02
- Placed 320 L.F. rough log terrace.
- Fertilized and seeded 0.35 ac. of sod and access disturbances.
- Borrowed 30 C.Y. of "near site" coversoil and reclaimed disturbance.
- Mulched 0.1 ac. of site not covered by sod.

4.2 Major Equipment List

Type	Make/Model	No. on Job
1/2 yd. loader/hoe	Bobcat 800 Series	1
1 yd. loader	Bobcat 900 Series	1

4.3 Contractor Employees

Throughout the construction of this project (including the Boyce/Swanson Site) 9 employees were used by the Contractor. The largest daily crew used was 5. The work force consisted of one operator and the remainder were laborers.

4.4 Construction Activities

Maddox Construction began work at the Shearson No. 1 site on July 31, 1990. For the first nine days of the original contract period, the contractor explored adits, stockpiled coversoil, deposited waste piles, incorporated lime into coal spoils, spread coversoil, applied "summer erosion control" mulch, removed debris and erected fencing at Shearson No. 1 sites 1-5.

Earthwork performed on these sites was excellent, with low impact to surrounding area due to use of small wheeled machinery. Lime incorporation was at first incorporated with a hand operated roto-tiller. This worked well, but was too labor intensive. At this point a disking attachment was constructed to fit on the end of a Bobcat bucket. This device worked well in loose material, but in hardpack areas the Contractor had to use the loader teeth to pre-rip the soil before incorporation could be achieved. This method was satisfactory.

Coversoil material was borrowed from the designated plan locations. Placement and conformity to the specifications was good. The small machinery worked well for this phase of the contract.

Straw mulch was spread at "summer erosion control" rates by hand. The contractor tended to use more straw than was specified. Assistance in determining the specified rate was provided by the field representative. Crimping was attempted with a disking blade retrofitted to fit the Bobcat loader bucket. Because of the convex shape of the blades and the lack of vertical force applied, this method worked

poorly. The Contractor was informed that his crimping results were not meeting specifications. He said that he was in the process of having a crimping tool attachment fabricated to fit the Bobcat bucket that would meet specifications for performance. An agreement was reached that the Contractor would have to return and remulch and recrimp each of the sites that failed to retain mulch at the seed date.

Three separate type F-4M fence enclosures were constructed around the five sites. Initially the wires were being strung too tight. After the first two enclosures the fence crew began installing the wires with less tension as requested. This request was made to avoid post pull-out and broken wires.

The next site worked was the Shearson\Shipley site. Work began on this site on 8/10/90. The west adit subsidence was full of glass, metal and plastic debris. The contractor covered this loose debris with approximately one foot of spoils material to protect equipment tires, then drove back and forth over the debris compacting it in place. Compaction eliminated approximately three feet of air at the center of the debris pile. The Contractor then proceeded to deposit the remainder of the spoils pile into the subsidence until the subsidence was full. Lime was hand spread uniformly over the site and incorporated with the bucket teeth and disker. Coversoil was borrowed from the top end and west side of the site. The coversoil was rocky and difficult to excavate with the Bobcat, but appeared to be acceptable for sustaining plant growth.

Mel Aamold (the primary equipment operator and construction supervisor) moved on to the Shearson/Shipley middle site while his crew erected fence around the west site. An adit exploration at the middle site showed no sign of an opening. The spoils material was deposited into the adit subsidence and graded to match adjacent contours. Lime was spread at the specified rate and incorporated. Coversoil was generated from the top end of the site, and again was rocky, but acceptable.

Mel then moved to the east site. There were no spoils at this site. The adit opening entered just under a large pine. Mel was instructed to save the tree. The Bobcat was able to work within the confines of the site without disturbing the tree. The furrowed edges of the adit were used as adit subsidence fill. The site was regraded as specified.

Remaining crew members spread straw mulch over the middle and east sites while Mel moved the equipment to the Petersen site on 8/23/90. He then went back to the Shearson/Shipley sites to crimp hand spread mulch. The same crimper attachment was used at this site. Again Mel was reminded that the device was not providing the specified mulch placement. Mel said he was in the process of making a new crimper attachment, but that it was not ready yet.

Mel moved back to the Petersen main site, attached the backhoe and explored the main adit. The adit opening was full of wood and miscellaneous debris. After removing the debris and exploring, the adit was found to be closed. Mel filled the exploratory hole per Standard Drawing 410.01. After regrading the waste pile and picking out the debris, lime was incorporated into the spoils and affected areas at the specified rate with the bucket teeth and disker attachment.

Coversoil for the Petersen site was borrowed from the south and east edges of the main site. This material was very rocky and had to be selected carefully to get an acceptable coversoil. After application and grading of the coversoil, straw mulch was spread over the site and crimped with the disker/crimping attachment.

At this point in time Mel began to get well ahead of his fence crew. They were still erecting fence at the Shearson/Shipley sites. On 8/27/90 Mel attached the backhoe and explored the subsided shaft below the main prospect at the Petersen site. No opening was found. The shaft was closed with rock and surrounding fill from the perimeter. Straw mulch was spread and crimped into all disturbed areas. Fence corner posts were placed while waiting for the remaining crew.

On 8/28/90 Mel moved his Bobcats to the Benjamin Hill site. While unloading the 900 series Bobcat, he sheared a chainstay and wrecked his drive chain. Three days were lost making repairs to the machine. The remaining crew finished fencework at the Shearson/Shipley and Petersen sites and began the hand adit closures at Shearson No.1 (site 6) and the Petersen east and south sites.

On 8/31/90, after repairs were completed on the 900 series Bobcat, the dug well at the Benjamin Hill site was closed to ground level with area rock. The material used was clean and free of spoils contamination. The tipple and other debris was then loaded and hauled away from the site. Mel began the adit closure per Standard Drawing 410.01 on 9/3/90 while the remaining crew continued the Petersen hand adit closure work. Lime was spread and incorporated over the upper 3/4 of the site and coversoil was borrowed and spread over this area before the lower end of the site was worked. This approach enabled the Contractor to operate over the low end of the site while placing coversoil over the upper end. Lime incorporation was completed at the Benjamin Hill Site on 9/4/90. Some of the lime was incorporated by hand with shovels. The remainder was tilled with the Bobcat disker attachment. Incorporation achieved at this site was good due to the loose nature of the spoils material. Coversoil work at the Benjamin Hill site was finished on 9/7/90. The finish contour is a straight slope from the top of the site to the bottom. Although this matched the adjacent contours, a terraced site would have been more desirable. The machinery used for reclaiming this site performed marginally. A tracked vehicle would have allowed for better compaction and more desirable finish contours. Steel tracks made to attach to a Bobcat were brought on site on 9/4/90. The tracks were borrowed and would not fit Mel's Bobcats. Therefor the tracks were never used. Mel was asked to track the site, but decided he would rather risk having to return to the site to make necessary repairs rather than go to the initial expense of renting tracked equipment. Straw mulch was hand spread and crimped at the upper half of the site. The crimping achieved using this method was acceptable, although the coversoil was loose enough to allow the straw to pull free easily. The lower half of the Benjamin Hill site was covered with the same coversoil material, but crimping was achieved with the crimping attachment for the Bobcat bucket. The hand crimping was actually better than the machine crimping in this case.

Mel moved his equipment to the Frank Bland site on 9/10/90. He began work at the south site by clearing deadfall and brush away to allow access and coversoil borrow. The upper adit at this site appeared to be fully subsided and was impossible to access without causing a good deal of off site damage. Since a lower adit subsidence was found, the decision was made to move the spoils into this depression and not disturb the upper area. A rock break was placed at the end of the upper adit subsidence to slow any drainage that ran down the subsidence. This measure was taken to prevent the wash out of the site below the subsidence.

After finishing earthwork at the south site Mel moved on to the west site and performed the adit closure and spoils deposition per Standard Drawing 410.01. He then moved to the East adit and did the same with the open adit there. The shaft above the east site was explored and filled per specifications. Upon completion of the spoils earthwork at these sites, Mel brought lime on site and spread and incorporated the specified amounts into each site. After incorporating the lime, coversoil which had been stockpiled during initial earthwork was spread over each site. The placement of coversoil throughout the project to date was good. The small machinery seems to do a better job of distributing the material evenly. Straw mulch was spread and crimped over each of these sites on 9/11 and 9/12/90 with the new crimping tool, which performed much better than the original tool. The new tool also attached to the Bobcat bucket, was much heavier than the old crimper and had straight notched disks.

Mel then moved to the Maxwell Mine and performed the adit closure and earthwork while the remaining crew erected fencing around the Frank Bland sites. The Maxwell adit was filled on 9/14/90 and the site earthwork and lime incorporation was accomplished on 9/17/90. The contractor picked up the pace to meet his completion deadline based on a letter from the engineer reminding him of the expected completion date. The small prospect hole at the Maxwell Mine was filled with the waste material at the low end. After

completion of lime incorporation at this site, coversoil was borrowed from an area between the main prospect and the small prospect to cover the disturbed areas. Straw mulch was spread by hand and crimped using the new crimping tool. The crimping accomplished at this site was much better than the results at the sites crimped previous to this date. Fencing at the Maxwell site was finished on 9/18/90.

The contractor moved to the Ward Mine on 9/19/90. The adit at this site was found to be open during exploration. The opening was closed per Standard Drawing 410.01. Coversoil for this site was stockpiled from the area around the adit opening, but was not enough to provide the specified coverage so a borrow area at the top end of the site was designated. Lime was spread and incorporated at twice the rate as the previous sites per the plans. Incorporation was difficult due to the rocky nature of the site. The teeth of the Bobcat bucket had to be used to rip the site before disking could be accomplished. Some areas of the site were not incorporated to the specified depth due to the discovery of a sandstone outcrop running at a six inch depth near the top end of the site. Coversoil at this site was marginal, but due to the rocky nature will form a rock mulch and will not wash, or otherwise erode easily. Crimping of straw mulch at this site was attempted with the new crimping device that Mel had fabricated, but the final product was marginal due to the nature of the available coversoil. Fence work was being accomplished at the same time.

The contractor moved to the Larson site on 9/21/90 and performed the hand adit closures. Mel was able to navigate his bobcat into the east and middle sites and perform closure at these sites with the machinery without damaging the surrounding terrain. The rock used for closure of these two adits was large machine placed rock and smaller hand placed riprap to form a complete seal. The west site was only accessible to hand closure. This adit was closed per specifications. All three adits were closed on 9/21/90.

At this point in the project a rough punchlist of Items that needed attention was given to the contractor to be corrected before final inspection. The Contractor hired an explosives professional to perform closure of the remaining hand adit closures where this was an option on 9/25/90. The north prospect at the Peterson site was closed using one stick of dynamite and a small amount of blasting adjacent. This worked well to loosen the surrounding rock, but hand placement still had to be performed. The two adits at the Gray site were closed using similar blasting methods and closure at the sites was mainly achieved this way. Some hand placement still had to be performed. During the closure of the No. 1 adit at the Gray site rock was strewn below the site and onto the adjacent field. The contractor removed all of this scattered rock and made repair to the landowners dam in order to make amends to the landowner. The ABN Mine was the last adit to be closed using explosives. Again the explosives only loosened the surrounding rock and most of the rock had to be placed into the adit by hand.

The remaining crew worked at the east, south and southeast adits at the Peterson site to complete hand closure of these three adits. This task was completed on 9/25/90.

Seeding and fertilizing of all the sites was accomplished using broadcast methods. The quantities of seed and fertilizer for each site were field determined and conformed to the specifications. Seed was spread at twice the specified rate because broadcasting was the method used. All seeding and fertilizing was performed on 10/18/90. The contractor did a good job of seeing that the method of spreading was uniform and covered all disturbed areas. Areas of disturbance that did not fall within the contract specifications were broadcast at the contractors expense per specifications.

Work Directive Change No. 1 was processed and signed to add the Boyce/Swanson site to this project. Work at the additional Boyce/Swanson site was begun on 10/30/90. The first work performed at this site was the removal and disposal of the erosion control material that had been previously placed on the site. The upper opening above the west site was determined to be a shaft, and was filled and recorded as a shaft closure. The adit was closed per Standard Drawing 410.02. The shaft between the sites was filled with rock rip/rap generated from the area. Rough six inch diameter logs were placed in hand excavated trenches at the low end of both sites to form log terrace structures. The logs were pinned in place with four

foot long rebar stakes. After the log terraces were placed, Mel began cutting the ditch at the uphill side of the road as per the contract agreement. This spoils/waste material was deposited at a void area near the access to the east site which had been field determined to be a deposition area. The material was needed to allow the contractor to climb the embankment with his bobcat to access the sites. Mel agreed to reclaim the access routes at his own cost. Lime incorporation was performed on 10/31/90 at the east site. The teeth of the Bobcat bucket were used to incorporate the lime since the disker attachment was not navigable on these slopes. Incorporation was achieved to approximately a six inch depth. On 11/1/90 approximately 35 yards of topsoil/coversoil was borrowed from an area across the road from the west site near Parr Creek. The material borrowed was the best coversoil generated to date during the coarse of this project. Thirty yards of this material were uniformly spread over the west site. The remaining five yards were stockpiled for use in reclaiming access routes and covering the deposition area. The east site was not coversoiled based on the directive of the DSL AMRB.

During a site visit on 11/2/90, John Koerth of the DSL AMRB tested the limed spoils with a hand held PH meter. The Ph level was not what John expected to achieve, so he requested that we test the lime used for adherence to the specified gradation. This was done and showed the composite lime sample taken from the stockpile to be of a coarser grade than specified. Lab tests were performed on the spoils material and showed the pH level to be acceptable. During the delay in the completion of the Boyce/Swanson site, while waiting for arrival of the native grass sod from the supplier, the decision was made by DSL AMRB that the contractor should be paid for only the percentage of the lime which passed the specified gradation. This decision was based on the Technical Specification section 301.02 A. This meant that the contractor would only be paid for 44 percent of the lime provided and placed during the entire contract. A letter was sent to the contractor indicating this. Because the Boyce/Swanson site was still incomplete additional lime was added and incorporated so that the specified rate was placed at this site. This was accomplished on 11/19 & 11/20/90. The coversoil at the west site was pushed aside and stockpiled during incorporation of additional lime, and then respread over the site. The coversoil borrow area was regraded, mulched, crimped, seeded and fertilized on 11/20/90.

The first sod arrived on site on 11/17/90 and was placed on the upper end of the east site. A winter snowstorm stopped work from 11/20 to 12/3/90. The remaining two shipments of sod were delivered on 12/2/90 and were placed over the sites. The third shipment of sod was sheep fescue and was mainly divot sized chunks of varying sizes. Very little of this shipment was able to be rolled out over the site. Most of the pallets were frozen mounds of sod mulch. The contractor requested to be paid double the labor rate to place this product because of the time cost to him. A Work Directive Change was processed to allow for this increase in cost. All sod placement was completed on 12/6/90. The access roads and deposition area were coversoiled, graded, seeded, fertilized and mulched per specifications. Additional log barriers were placed on slopes where erosion was a concern. Rock riprap which the contractor had hauled in to close the adit and shafts, but which was not used, was used to riprap the bottom edge of the east site to prevent erosion.

A water permit to use Parr Creek as a source was acquired by the Contractor from the DNRC. Mel was asked to further contact the Fish, Wildlife and Parks Department and Water Quality Bureau to be sure that no further user permits were needed. This was accomplished on 12/7/90. The pump system was set up and tested on this same day. On 12/8/90 the contractor sprayed the sites using the pumping system he installed, using Parr Creek as his source. The flow rate at the top end of the west site was estimated by timing while the contractor filled a five gallon bucket. This flow rate (approximately 30 gallons per minute) was used to determine the application time required to provide the specified 9000 gallons of water. The actual flow rate at the east site approached twice the measured rate. Both sites were watered to the point of saturation. The contractor sprayed the adjacent road with water to settle the dust caused by the regrading of the road near the site. Seed and fertilizer were spread over the disturbed areas outside the site boundary as a final measure to complete the site.

Construction was finished on 12/8/90. This included completion of punchlisted items from the previously completed sites.

4.5 Quantities Used

Actual Quantities Used (Bid Components)

1)	Mobilization, Bonding and Insurance	1 LS
2)	Debris Cleanup	1 LS
3)	Waste Pile Disposal	4,100 CY
4)	Close Mine Opening: Adit	18 EA
5)	Close Mine Opening: Shaft	5 EA
6)	Lime Application	1.82 AC
7)	Fertilize & Seed	5.17 AC
8)	Mulch	4.85 AC
9)	Remove & Reset Fence	250 LF
10)	Farm Fence (Type F-4M)	6,561 LF
11)	Farm Fence Gate, 16'	14 EA
12)	Fence Double Panel	44 EA
13)	Fence Single Panel	15 EA
14)	Fence Terminal Post	12 EA
15)	Excavation & Embankment	1 LS
16)	Sod Procurement & Placement	1,555 SY
17)	Water Application	9,000 GAL
18)	6" Rough Log Structures	320 LF
19)	Coversoil Borrow & Placement	30 CY

5. PAYMENT REQUESTS

5.1 Sample Pay Requests

Following is a copy of each of the three payment requests.

1.3

RECEIVED

SEP 14 1990

ROBERT PECCIA & ASSOCIATES

PAYMENT REQUEST NO. 1

FROM July 31 TO Aug. 31

PROJECT TITLE: Fergus and Judith Basin Counties Remaining Prospects AMR Project

LOCATION: Fergus and Judith Basin Counties DSL-AMRB: 90-006

NAME OF CONTRACTOR: Maddox Construction

ADDRESS: P.O. Box 6877, Great Falls, MT 59406

CHANGE ORDERS		
No.	Description	Amount
Total Change Orders		

CONTRACT STATUS			
Total Amount	Completed Amount	Uncompleted Amount	Percent Complete
$53,439.50	~~28,272.06~~	~~25,167.44~~	~~52.89%~~
	28,811.86	24,627.64	54%

CONTRACT TO DATE INCLUDING CHANGE ORDERS $ _____

* For use only when securities are on deposit in lieu of retainage.

TOTAL RETAINAGE $ _____

SECURITIES ON DEPOSIT $ _____

ADJUSTED RETAINAGE $ _____

COMPLETED TO DATE	$28,272.06	28,811.86
PLUS MATERIALS ON SITE	$6,000.06	5,666.93
TOTAL COMPLETED TO DATE	$34,272.06	34,478.7[illegible]
LESS RETAINAGE 10%	$3427.21	3,447.8[illegible]
TOTAL AMOUNT EARNED TO DATE	$30,844.85	31,030.[illegible]
LESS PREVIOUS PAYMENTS	$—	0
AMOUNT DUE THIS PAYMENT	$30,844.85	31,030.9[illegible]
LESS 1% TAX	$308.45	310.31
TOTAL DUE CONTRACT	$30,536.40	30,720.6[illegible]

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

MADDOX CONSTRUCTION
Contractor

By Melvin R Arnadt - Supervisor

Date 9-5-90

APPROVED BY:

MONTANA DEPT. OF STATE LANDS
Owner

By Larry Marshall

Date 9/10/90

RECOMMENDED BY:

ROBERT PECCIA & ASSOCIATES, INC.
Engineer

By Terry Campbell 9-7-90

Date 8/30/90

Rev. 3/90

ITEMIZATION OF QUANTITIES AND COSTS

Item	Description	Estimated Plan Quantity	Unit Price Bid	Units of Work Completed To Date	Total Cost of Complete Work	Percent Complete
1.	Mobilization, Bonding, and Insurance	1 LS	$17,901.75	1 LS	17,901.75	100
2.	Debris Cleanup	1 LS	2,000.00	0	0	0
3.	Waste Pile Disposal	1 LS	5,000.00	0	0	0
4.	Close Mine Opening: Adit	18 EA	211.11	~~2 EA~~ 3 EA.	633.33	16.67%
5.	Close Mine Opening: Shaft	3 EA	266.66	1 EA.	266.66	33.33%
6.	Lime Application (20 T/AC)	3.4 AC	1176.47	0.65 Ac.	~~224.91~~ 764.71	19.12%
7.	Fertilize and Seed	4.75 AC	357.89	0	0	0
8.	Mulch	4.75 AC	231.58	1.17 Ac.	270.95	24.63%
9.	Remove and Reset Fence	275 LF	2.00	0	0	0
10.	Farm Fence (Type F-4M)	5,800 LF	.86	3509 LF	3017.74	60.5%
11.	Farm Fence Gate, 16'	9 EA	77.77	7 EA	544.39	77.78%
12.	Fence Double Panel	56 EA	166.07	24 EA	3985.68	42.86%
13.	Fence Single Panel	10 EA	140.00	9 EA	1260.00	90.0%
14.	Fence Terminal Post	6 EA	33.33	5 EA	166.65	83.33%
TOTAL					~~28,272.06~~ 28,811.86	~~52.89%~~ 54%

Rev. 3/90 9-7-90

RECEIVED
OCT 17 1990
ROBERT PECCIA & ASSOCIATES

PAYMENT REQUEST NO. 2

FROM September 1, 90 TO September 25, 90

PROJECT TITLE: Fergus & Judith Basin Counties Remaining Prospects AMR Project

LOCATION: Fergus & Judith Basin Counties DSL-AMRB: 90-006

NAME OF CONTRACTOR: Maddox Construction

ADDRESS: P.O. Box 6877, Great Falls, MT

CHANGE ORDERS		
No.	Description	Amount
Total Change Orders		

CONTRACT STATUS			
Total Amount	Completed Amount	Uncompleted Amount	Percent Complete
$53,439.50	48,620.09	4819.41	91%

CONTRACT TO DATE INCLUDING CHANGE ORDERS $ _____

* For use only when securities are on deposit in lieu of retainage.

TOTAL RETAINAGE $ _____

SECURITIES ON DEPOSIT $ _____

ADJUSTED RETAINAGE $ _____

COMPLETED TO DATE	$ 48,620.09	
PLUS MATERIALS ON SITE	$ _____	
TOTAL COMPLETED TO DATE	$ 48,620.09	
LESS RETAINAGE 10% OF	$ 4862	
TOTAL AMOUNT EARNED TO DATE	~~$ 43,758.09~~	43,758.09
LESS PREVIOUS PAYMENTS	$ 30,720.60	
AMOUNT DUE THIS PAYMENT	~~$ 13029.49~~	13,037.49
LESS 1% TAX	~~$ 130.29~~	130.37
TOTAL DUE CONTRACT	~~$ 12,899.20~~	12,907.12

RBM 10/22/90

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

Maddox Roofing
Contractor

By Perry Maddox

Date 10/10/90

APPROVED BY:

_____
Owner

By _____

Date _____

RECOMMENDED BY:

Robert Peccia & Associates, Inc.
Engineer

By Terry Campbell ABMator

Date 10/22/90 10/22/90

COPY

Rev. 3/90

ITEMIZATION OF QUANTITIES AND COSTS

Item	Description	Estimated Plan Quantity	Unit Price Bid	Units of Work Completed To Date	Total Cost of Complete Work	Percent Complete
1	Mobilization, Bonding, and Insurance	1 LS	17,901.75	1 L.S.	17,901.75	100% pd.
2	Debris Cleanup	1 LS	2,000.00	0	0	0
3	Waste Pile Disposal	1 LS	5,000.00	1 L.S.	5,000.00	100%
4	Close Mine Opening Adit	EA.	211.11	16 EA.	3,377.76	100%
5	Close Mine Opening Shaft	3 EA.	266.66	3 EA.	799.98	100%
6	Lime Application (2OT/Ac.)	3.4 Ac.	1176.47	3.4 Ac.	4,000.00	100%
7	Fertilize & Seed	4.75 Ac.	357.89	0	0	0%
8	Mulch	4.75 Ac.	231.58	2 Ac.	463.16	42.11%
9	Remove & Reset Fence	275 L.F.	2.00	275 L.F.	550.00	100%
10	Farm Fence (Type F-4M)	5,800 L.F	0.86	6553 L.F.	5635.58	100%
11	Farm Fence Gate	9 EA	77.77	14 EA.	1088.78	100%
12	Fence Double Panel	56 EA	166.07	44 EA.	7,307.08	100%
13	Fence Single Panel	10 EA	140.00	15 EA.	2,100.00	100%
14	Fence Terminal Post	6 EA	33.00	12 EA.	396.00	100%
TOTAL					48,620.09	90.96%

RECEIVED

DEC 18 1990

ROBERT PECCIA & ASSOCIATES

PAYMENT REQUEST NO. 3

FROM 9-26-90 TO 12-8-90 Final

PROJECT TITLE: Fergus and Judith Basin Counties Remaining Prospects AMR Project

LOCATION: Fergus and Judith Basin Counties DSL-AMRB: 90-006

NAME OF CONTRACTOR: Maddox Construction

ADDRESS: P.O. Box 6877, Great Falls, MT 59406

CHANGE ORDERS		
No.	Description	Amount
1		14,275.21 ~~16,515.21~~
Total Change Orders		

CONTRACT STATUS			
Total Amount	Completed Amount	Uncompleted Amount	Percent Complete
53439.50	67,714.71		
	~~69,954.71~~		

CONTRACT TO DATE INCLUDING CHANGE ORDERS $~~69,954.71~~

* For use only when securities are on deposit in lieu of retainage.

TOTAL RETAINAGE $ _____

SECURITIES ON DEPOSIT $ _____

ADJUSTED RETAINAGE $ _____

COMPLETED TO DATE	$~~69,954.71~~	67,714.71
PLUS MATERIALS ON SITE	$ 0	
TOTAL COMPLETED TO DATE	$~~69,954.71~~	67,714.71
LESS RETAINAGE	$ -0-	
TOTAL AMOUNT EARNED TO DATE	$~~69,954.71~~	67,714.71
LESS PREVIOUS PAYMENTS	$ 44068.40	
AMOUNT DUE THIS PAYMENT	$~~25,886.31~~	23,646.31
LESS 1% TAX	$ ~~258.87~~	236.46
TOTAL DUE CONTRACT	$~~25,627.44~~	23,409.85

I.C. 1/7/91

F.M. 1/10/91

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

MADDOX CONSTRUCTION
Contractor

By Larry Maddox

Date 12-17-90

APPROVED BY:

MONTANA DEPT. OF STATE LANDS
Owner

By Larry Marshall

Date 1/11/91

RECOMMENDED BY:

ROBERT PECCIA & ASSOCIATES, INC.
Engineer

By Alden L. Beard

Date 1-8-91

Rev. 3/90

ITEMIZATION OF QUANTITIES AND COSTS

Item	Description	Contract Quantity	Unit Price Bid	Units of Work Completed To Date	Total Cost of Complete Work	Percent Complete	
1.	Mobilization, Bonding, and Insurance	1 LS	$17,901.75	1.0	$17,901.75	100	✓
2.	Debris Cleanup (original project + Boyce/Sw.)	1 LS	2,000.00	1.38	2,760.00	138	✓
3.	Waste Pile Disposal	1 LS	5,000.00	1.0	5,000.00	100	✓
4.	Close Mine Opening: Adit (Original project + Boyce/Sw.)	18 EA	211.11	18.0	3,799.98	100	✓
5.	Close Mine Opening: Shaft (Original project + Boyce/Sw.)	3 EA	266.68	5.0	1,333.30	166.6	✓
6.	Lime Application (20 T/AC)	3.4 AC	1176.47	~~3.4~~ 1.5	~~4000~~ 1760	~~100%~~	~~44~~
7.	Fertilze and Seed (Original project + Boyce/Sw.)	4.75 AC	357.89	5.1	1,825.22	107.4	1.8
8.	Mulch (Original project + Boyce/Sw.)	4.75 AC	231.58	4.85	1,123.16	102.1	
9.	Remove and Reset Fence	275 LF	2.00	250.0	500.00	90.9	✓
10.	Farm Fence (Type F-4M)	5,800 LF	.86	6,561.0	5,642.46	113.1	✓
11.	Farm Fence Gate, 16'	9 EA	77.77	14.0	1,088.78	188.9	✓
12.	Fence Double Panel	56 EA	166.07	44.0	7,307.08	78.6	✓
13.	Fence Single Panel	10 EA	140.00	15.0	2,100.00	150	✓
14.	Fence Terminal Post	6 EA	33.33	12.0	399.96	200	✓
15.	Excavation & Embankment (Cut Ditch @ Boyce/ Swanson Site)	1 LS	350.00	1.0	350.00	100	✓
16.	Sod Procurement & Placement (Thickspike Wheatgrass) Boyce/Swanson Site	888.89SY	4.71	888.89	4,186.67	100	✓
17	Sod Procurement & Placement (Sheep Fescue) Boyce/Swanson Site	6666.66SY	7.50	6666.66	4,999.95	100	✓
18	Water Application Boyce/Swanson Site	9000GAL	0.21	9000	1,890.00	100	✓
19	6" Rough Log Structures	320LF	5.47	320	1,750.40	100	✓
20	Coversoil Borrow, Placement	30 CY	35.00	30	1,050.00	100	✓
21	Lime Application (20T/Ac) Boyce/Swanson Site	0.32AC	2,956.25	0.32	946.00	100	✓
TOTAL					~~69,954.71~~ 67,714.71		

1-14

54,781.69

15-21

$15,173.02

Rev. 3/90

5.2 Cost Per Site

	Site Name	Amount
1)	Maxwell	$4,578.58
2)	ABN (Abbott)	$2,038.54
3)	Shearson No. 1	$7,903.87
4)	Shearson/Shipley	$7,116.74
5)	Larson (Bodner)	$2,460.76
6)	Ward	$5,555.11
7)	Benjamin Hill	$4,178.45
8)	Petersen	$5,448.10
9)	Gray	$2,249.65
10)	Frank Bland	$7,731.60
11)	Boyce/Swanson	$18,453.31

5.3 Cost Summary and Total Project Cost

Following is an Item by Item Cost versus Total Project Cost Summary:

- Item No. 1 (Mobilization, Bonding and Insurance) -
  This item was split evenly between the eleven sites. The total paid for this Item was $17,901.75. When divided by the 11 sites, results in $1,627.45 per site.

- Item No. 2 (Debris Cleanup) -
  $2,000.00 of the total $2,760.00 paid for this item were split evenly among the original 10 sites to equal $200.00 per site. Seven hundred sixty dollars was paid for this item at the Boyce/Swanson site due to the price quote received from the contractor to remove erosion matting and debris.

- Item No. 3 (Waste Pile Disposal) -
  The total $5,000.00 paid for this item was split among the original 10 sites according to the site yardage divided by the total yardage, times the total cost. Waste Pile Disposal was paid for at $1.22 per cubic yard for all 10 sites.

- Item No. 4 (Close Mine Opening: Adit) -
  $211.11 per adit closure was paid for all 18 adits closed.

- Item No. 5 (Close Mine Opening: Shaft) -
  $266.66 per shaft was paid for all 5 shaft closures.

- Item No. 6 (Lime Application [20 T/Ac.]) -
  Payment of this item was made at 44% of the contract amount for all 10 original sites ($152.25 per acre). This item was paid at $2,956.25 per acre for the Boyce/Swanson site because additional lime was supplied by the contractor to provide the 100 percent of specified grade. Incorporation was more difficult at the Boyce/Swanson site. This item was also based on the final acreage measurements performed for each site. Total acreage was 3.4 acres.

- Item No. 7 (Fertilize and Seed) -
  Payment of this Item was made at $357.89 per acre. Item site costs were calculated from the final acreage measurements made at each site.

- Item No. 8 (Mulch) -
  $231.58 per acre was paid, based on final acreage measurements, for each site.

- Item No. 9 (Remove and Reset Fence) -
  This item was paid for at $2.00 per lineal foot. A total of 250 lineal feet of fence removal and replacement was paid for.

- Item No. 10 (Farm Fence [Type F-4M]) -
  Farm Fence was paid for at $0.86 per lineal foot and was attributed to each site according to finish fence dimensions.

- Item No. 11 (Farm Fence Gate) -
  $77.77 was paid for each of 14 gates installed.

- Item No. 12 (Fence Double Panel) -
  $166.07 was paid for each of 44 double panels installed.

- Item No. 13 (Fence Single Panel) -
  $140.00 was paid for each of 15 single panels installed.

- Item No. 14 (Fence Terminal Post) -
  $33.33 was paid for each of 12 terminal posts installed.

- Item No. 15 (Excavation and Embankment) -
  A lump sum of $350.00 was paid for the road work performed at the Boyce/Swanson site.

- Item No. 16 & 17 (Sod Procurement and Placement) -
  1,555.55 square yards of native grass sod were procured and placed at the Boyce/Swanson site for $9,186.62 or $5.91 per square yard.

- Item No. 18 (Water Application) -
  9,000 gallons of water were evenly spread over the Boyce/Swanson sod for $1,890.00, or $0.21 per gallon. This included obtaining permits and pumping from Parr Creek.

- Item No. 19 (6" Rough Log Structures) -
  320 lineal feet of log slope stabilizing structures were supplied and placed (at the Boyce/Swanson mine) with 4 foot rebar stakes for $5.47 per lineal foot.

- Item No. 20 (Coversoil Borrow and Placement) -
  Placement of a 4 inch coversoil at the north site of the Boyce/Swanson mine was paid for at $35.00 per cubic yard. This cost included reclamation of the borrow site.

- Item No. 21 (Lime Application - Boyce/Swanson) -
  (See Item No. 6)

Following is a revised per site cost tabulation for the eleven sites contained within the scope of this project.

Per Site Cost Tabulation

No.	Description	Maxwell	ABN	Shearson	Shearson/SH	Larson	Ward	Benjamin Hill	Peterson	Gray	Bland	Boyce/ Swanson	Total
1.	Mobilization	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$1,627.43	$17,901.75
2.	Debris	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$760.00	$2,760.00
3.	Waste/Disp.	$609.76	$0.00	$914.63	$853.66	$0.00	$975.61	$487.80	$609.76	$0.00	$548.78	$0.00	$5,000.00
4.	Acit	$211.11	$211.11	$211.11	$211.11	$633.33	$211.11	$211.11	$844.44	$422.22	$422.22	$211.11	$3,799.98
5.	Shaft	$0.00	$0.00	$266.66	$0.00	$0.00	$0.00	$266.66	$0.00	$0.00	$266.66	$533.32	$1,333.30
6.	Lime (44%)	$155.30	$0.00	$362.35	$258.82	$0.00	$414.12	$103.53	$258.82	$0.00	$207.06	$0.00	$1,760.00
7.	Seed & Fert.	$143.15	$0.00	$357.88	$268.42	$0.00	$357.89	$143.16	$250.52	$0.00	$178.95	$125.25	$1,825.22
8.	Mulch	$92.62	$0.00	$231.58	$173.69	$0.00	$231.58	$92.63	$162.11	$0.00	$115.79	$23.16	$1,123.16
9.	Remove Fence	$50.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$400.00	$0.00	$500.00
10.	Farm Fence	$607.16	$0.00	$1,543.70	$1,142.94	$0.00	$655.32	$496.22	$330.24	$0.00	$866.88	$0.00	$5,642.46
11.	Gate	$77.77	$0.00	$233.31	$233.31	$0.00	$77.77	$77.77	$77.77	$0.00	$311.08	$0.00	$1,088.78
12.	Doub. Pan	$664.28	$0.00	$1,328.56	$1,660.70	$0.00	$664.28	$332.14	$830.35	$0.00	$1,826.77	$0.00	$7,307.08
13.	Single Pan	$140.00	$0.00	$560.00	$420.00	$0.00	$140.00	$140.00	$140.00	$0.00	$560.00	$0.00	$2,100.00
14.	Ter. Post	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$199.98	$0.00	$399.96
15.	Exc. & Emb.	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$350.00	$350.00
16.	Sod Proc. & Pl.	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,186.67	$4,186.67
17.	Sod Proc. & Pl.	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,999.95	$4,999.95
18.	Water	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,890.00	$1,890.00
19.	6" Log Terr.	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,750.40	$1,760.00
20.	Coversoil	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,050.00	$1,760.00
21.	Lime (100%)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$946.00	$946.00
Total		$4,578.58	$2,038.54	$7,903.87	$7116.74	$2,460.76	$5,555.11	$4,178.45	$5,448.10	$2,249.65	$7,731.60	$18,453.31	

TOTAL PROJECT COST - $67,714.71

6. PROJECT SUMMARY

6.1 Summary of Project

The construction phase for the Fergus/Judith Basin Counties Remaining Prospects Abandoned Mine Reclamation Project was completed over a period of beginning on 7/31/90 and ending 12/8/90. The original contract allotted 60 calendar days. Actual construction took 97 calendar days. The additional "contract time" was added in Change Order No. 1.

Most aspects of the construction phase went smoothly. The areas of concern that developed during construction were 1) straw mulch crimping; 2) coversoil at the Ben Hill site; and 3) non-compliance of lime used with gradation specifications. Of these problems the lime issue has the most potentially dire consequences. Although lab analysis of the incorporated spoils/lime at the Boyce/Swanson sites showed the achieved pH level to be acceptable, results of neutralization effort were marginal. Future testing under Contractor's Warranty are to be performed.

6.2 Site Condition After Completion

Maxwell Mine

This site was completed as-designed, and conformance to construction specifications was good. The mine opening was closed with rock from the site. Regrading of the site was accomplished without disturbing surrounding vegetation. coversoil was borrowed from the edge of the site and appeared good. Straw mulch was crimped into the coversoil and the crimping achieved was the best to date throughout this project. (The Contractor crimped this site using the new crimping device constructed about half-way through the project.)

Access to this site was made using an existing access route. The plans discussed creating an access route. This would have been detrimental to the site because of the additional disturbance it may have caused.

ABN (Abbott) Mine

This site was a single hand closed adit and was performed in conformance with the contract documents. No off site disturbance was caused. Because of the pitch into the adit, riprap rolled well beyond 10 feet into the opening before lodging, which was helpful in achieving complete closure.

Shearson No. 1 Mines

This site involved five subsided adits, one subsided shaft and one open adit (for hand closure). The site finished out nicely. Because it was the first site worked, vegetation was partially established before cold weather set into the area. The straw mulch at this site did not stay set and was largely washed away by a storm before seeding date. The Contractor was instructed to place staked straw bales on one slope that had rilled slightly. This was done as opposed to re-crimping because the established vegetation would have been disturbed by the re-crimping process.

The landowners at this site seemed pleased with the work performed.

Shearson Shipley Mines

Three prospects make up the Shearson/Shipley site. Two subsided adits and one open adit were filled

during construction. The final contours at these sites will provide excellent drainage away from the spoils deposition areas and have already overgrown with native and wheatgrass vegetation. The straw mulch applied at these sites was partially washed away due to heavy rains just after completion. The resulting rills were raked out, seeded, fertilized and remulched.

The open adit was closed per specifications and care was taken to preserve a large pine directly over the opening.

Larson (Bodner) Mine

This site consisted of three open adits that were hand and machine closed. One of the openings was accessible to hand closure only. This closure was performed according to Standard Drawing 410.02. The other two adits were closed with very large rock using a Bobcat to push the rock into the openings. The closure achieved using this method was very permanent.

Ward Mine

This site finished out acceptable, but due to the nature of the available coversoil did not accept straw mulch crimping very readily. The rocky coversoil will not be susceptible to erosional elements and will help hold seed and fertilizer. Thus the final product should be successful. Access was gained to this site via an existing two track road. Therefore no off-site disturbance was caused. Lime was applied to the spoils at double the specified rate as called for in the plans.

Benjamin Hill Mine

The adit closure performed at the Ben Hill site was performed in accordance with Standard Drawing 410.01. The final contours achieved were marginal at this site. They matched the adjacent terrain, but no terracing was achieved because of equipment limitations. Due to the loose sandy nature of the coversoil used, some initial concern developed over the erosional characteristics of this material. Later investigation of compaction after moisture application showed the coversoil to have naturally compacted to an acceptable level. The straw mulch at this site was largely hand crimped and remained in place much better than was initially expected. The Engineer placed staked bales at the low end of the site to prevent coversoil erosion into Horsethief Creek.

Peterson Mines

All of the Peterson mines were closed in close conformance to the specifications. The open adits (3) were hand closed with rock riprap. The main prospect adit was closed with rock riprap. The main prospect adit was closed per Standard Drawing 410.01. The main prospect shaft was closed per Standard Drawing 410.03. The coversoil used at the main prospect was rocky, but acceptable. The mulch stayed in place through seed date and seeding and fertilizing was accomplished with broadcast methods. The only concern over the success of this site would be because wild turkeys consumed a large quantity of the seed placed.

Gray Mine

This site consisted of two open adits that were hand closed using explosives and hand placement. The results of blasting were mainly to loosen rock which had to be hand placed. The final closure results were in conformance to the specifications.

Frank Bland Mines

These three prospects consisted of two open adits and one subsided adit. The open adits were closed in

conformance to Standard Drawing 410.01. The rock was borrowed from outcroppings near the site. The off-site disturbance caused was negligible. The coversoil was borrowed from the edges of these mines. Crimping at the Frank Bland mine was performed twice. The second time with the new implement the Contractor built to adhere to crimping specifications. This tool worked well.

The south adit was left intact based on discussion in the field with DSL Program Manager and Contractor. The working of this subsided adit would have necessitated the removal of a large number of trees and brush. The decision to regrade the spoils below was made. The final contour at this site was excellent and the coversoil used was very good. Crimping was in conformance to specifications.

Boyce/Swanson Mines

This site was reclaimed in an experimental fashion. The site received more than double the specified lime rate because of non-conformance of the lime specifications for gradation. The north site consisted of two shafts and one adit. All openings were closed in conformance to specifications. The north site was covered with approximately 4 inches of coversoil before sod was placed on the finished grade. Both sites were sod covered with native grass sod (thickspike wheatgrass and sheep fescue). The bottom end of each site was protected from erosion with the installation of log terraces. The sod covered sites were watered using the adjacent Park Creek as a source of water. 9000 gallons of water (minimum) were applied. One concern that arose during construction of this site were the off-site disturbances caused accessing the site and borrowing coversoil. Reclamation efforts on these areas were good and were paid for by the contractor because he opted to cause them to access the site areas.

Some of the sod placed on the north site was frozen and broken into small pieces. This material was placed more as mulch/topsoil and did not conform to the initial design concept.

6.3 As-Built Drawings

Site maps in Appendix A have been revised to show As-Built conditions.

6.4 Maintenance Follow-up

Maintenance on these sites should be minimal, but because of the concern over the lime used to neutralize the sites, inspection under warranties is to be performed on all sites except the Boyce/Swanson site. If the tests performed under warrantee show the limed spoils at the sites to be more acidic than acceptable, each of the failing sites will be reworked to rectify this situation.

The Benjamin Hill mine will be inspected under warrantee for excessive erosion. If erosion occurs, the contractor will be required to rectify the problem by regrading, compacting, crimping, seeding, and fertilizing the site again.

7. COMMENTS/SUGGESTIONS

A "wish list" of several things that could have been done to eliminate problems that arose during construction of this project follow:

- First and foremost would be independent lab testing of all lime shipments before actual use. This problem indicates that documentation in the form of submittal from the supplier of a product should not always be accepted as submitted and may require pre-use testing by an independent lab.

* Another point that came from observing the use of "Summer Erosion Control" procedures was that it may be less of a problem to require the contractor to wait until seed date to spread coversoil and install and crimp vegetative mulch. By installing the straw mulch prior to seeding it is difficult to keep the mulch in place through windy fall conditions. By installing the mulch at seed date it would be more likely to be in-place through winter and in the spring when it is most important to minimize soil erosion and protect new seedlings and seeds.

* The small wheeled machinery used throughout the project provided benefits and posed problems. The machinery helped in most instances to minimize off-site disturbances. This was not the case at the Boyce/Swanson sites because switch-backs had to be installed to access the sites. Thus off-site disturbance was caused. Tracked machinery would have most likely eliminated this disturbance. The small machinery also caused scheduling difficulties for the Contractor due to break-downs and increased operating time because of payload capabilities.

* Sod used as a test cover at the Boyce/Swanson site was difficult to place due to the irregular sizes and shapes of the individual pieces. Tighter specification control would be advisable in the future to provide for the installation of a higher quality product. The sod installed was approximately 50 percent sod and 50 percent sod chunks. The sheep fescue sod used did not hold together well.

8. ANALYSIS OF CONSULTANT COSTS INCURRED

Following is a percentage cost comparison of engineering costs versus construction costs for the Fergus and Judith Basin Counties Remaining Prospects AMR project. The engineering costs on this project were, percentage wise, high for several reasons. Below are some reasons for the percent of engineering cost:

- The contract was extended for over two months to add the Boyce/Swanson site. Thus, added field time and planning time were incurred.

- The contract price was low when compared with the estimated cost for completing the work.

- The multiple small sites required a large amount of investigating and planning per site. Larger, more condensed sites are normally more engineering efficient.

- The lime dispute which arose near the end of the construction phase required a good deal of project administration time and testing.

- Procurement of the native grass sod required added effort on the part of the project manager and field representative. The supplier was slow at providing the product.

- The use of the small wheeled machinery extended the amount of time spent in the field by the Engineer's field representative.

ANALYSIS OF CONSULTANT COSTS INCURRED
FOR THE MONTANA DEPARTMENT OF STATE LANDS
ABANDONED MINE RECLAMATION BUREAU
AMR PROJECT NUMBER: MONTANA A/E 90-006
JUDITH BASIN/FERGUS COUNTY SITES AMR PROJECT
RPA PROJECT NUMBERS: #89-30.28, #89-30.32, #90-30.8
DATE OF PREPARATION: MARCH 15, 1991

ENGINEERING SERVICE	AMOUNT
DESIGN ENGINEERING:	
1989 CONTRACT	$7,184.18
1990 CONTRACT	$126.66
SUBTOTAL DESIGN ENGINEERING COST:	$7,310.84
CONSTRUCTION ENGINEERING AND PROJECT ADMINISTRATION COST:	
1989 CONTRACT	$0.00
1990 CONTRACT	$36,745.08
SUBTOTAL CONSTRUCTION ENGINEERING COST:	$36,745.08
PROJECT ENGINEERING COST:	$44,055.92
CONSTRUCTION COST:	$67,714.71

TO CALCULATE PERCENTAGE ENGINEERING FEES TO CONSTRUCTION COST:

DESIGN ENGINEERING/CONSTRUCTION COST	10.7965%
CONSTRUCTION ENGINEERING/CONSTRUCTION COST	54.2645%
TOTAL ENGINEERING COST/CONSTRUCTION COST	65.0611%

EDIT DATE: MARCH 15, 1991---LAP

9. PHOTOGRAPHS

1. Maxell Mine - Adit Preparation
2. Maxell Mine - Adit Closure
3. Maxell Mine - Spoils Deposition
4. Maxell Mine - Lime Incorporation & Grading
5. Maxell Mine - Coversoil Over Adit

1. Maxwell Mine - Spoils Grading
2. Maxwell Mine - Coversoil Placement
3. Contractor's New Crimping Implement
4. Maxwell Mine - Straw Mulch Spread
5. Maxwell Mine - Straw Mulch Crimping

1. Maxwell Mine - Straw Over Regraded Exploratory Prospect
2. Maxwell Mine - Improved Crimping Results
3. Maxwell Mine - After Reclamation
4. Maxwell Mine - After Reclamation
5. Maxwell Mine - After Reclamation

1. Shearson Mines - Site No. 1 Before Construction

2. Shearson Mines - Site No. 1 Before Construction

3. Shearson Mines - Site No. 4 Before Construction

4. Shearson Mines - Site No. 2 Before Construction

5. Shearson Mines - Site No. 3 Before Construction

1. Shearson Mines - Site No. 3 Before Construction

2. Shearson Mines - Site No. 5 Before Construction

3. Shearson Mines - Site No. 4 Before Construction

4. Shearson Mines - Site No. 3 Before Construction

5. Shearson Mines - Site No. 2 Before Construction

1. Shearson Mines - Site No. 5 Before Construction
2. Shearson Mines - Site No. 6 Subsided Adit Before Closure
3. Shearson Mines - Site Not Worked
4. Shearson Mines - Site No. 4 Adit Exploration
5. Shearson Mines - Site No. 5 Adit Exploration

1. Shearson Mines - Site No. 1 Adit Exploration
2. Shearson Mines - Site No. 2 Adit Exploration
3. Shearson Mines - Site No. 3 Adit Exploration
4. Shearson Mines - Site No. 5 Spoils Deposition
5. Shearson Mines - Site No. 1 Spoils Deposition

1. Shearson Mines - Site No. 2 Spoils Deposition
2. Shearson Mines - Site No. 2 Lime Application
3. Shearson Mines - Site No. 1 Lime Incorporation
4. Shearson Mines - Sites No. 2 & 3 Coversoil Borrow Area
5. Shearson Mines - Site No. 1 Coversoil Stockpile

1. Shearson Mines - Coversoil Placement at Site No. 4
2. Shearson Mines - Mulch Crimping at Site No. 3
3. Shearson Mines - Close-up of Initial Crimping Tool (This was later replaced)
4. Shearson Mines - Mulch Crimping at Site No. 4
5. Shearson Mines - Mulch Cover at Site No. 3

1. Shearson Mines - Fence Construction Around Sites 2,3,& 4
2. Shearson Mines - Site No. 1 After Reclamation
3. Shearson Mines - Sites No. 2 & 3 After Reclamation
4. Shearson Mines - Site No. 5 After Reclamation
5. Shearson Mines - Site No. 5 Reclaimed Area in Farm Field Below Site

1. Shearson Mines - Site No. 3 After Construction
2. Shearson Mines - Site No. 4 After Construction
3. Shearson/Shipley Mines - West Adit Before Closure
4. Shearson/Shipley Mines - West Site Before Reclamation
5. Shearson/Shipley Mines - Middle Adit Before Construction

1. Shearson/Shipley Mines - Middle Site Before Reclamation
2. Shearson/Shipley Mines - Middle Adit During Exploration
3. Shearson/Shipley Mines - Middle Site Lime Incorporation
4. Shearson/Shipley Mines - West Site After Lime Incorporation
5. Shearson/Shipley Mines - West Site After Lime Incorporation

1. Shearson/Shipley Mines - West Site After Coversoiled

2. Shearson/Shipley Mines - West Site After Reclamation

3. Shearson/Shipley Mines - West Site After Reclamation

4. Shearson/Shipley Mines - Middle Site After Reclamation

5. Shearson/Shipley Mines - Middle Site After Reclamation

1. Shearson/Shipley Mines - East Site Seeding & Fertilizing
2. Shearson/Shipley Mines - East Site After Reclamation
3. Shearson/Shipley Mines - East Site After Construction
4. Larson Mines - Middle Adit Before Closure
5. Larson Mines - East Adit Before Closure

1. Larson Mines - East Adit After Closure
2. Larson Mines - Middle Adit After Closure
3. Larson Mines - West Adit After Closure

1. Ward Mine - Before Construction
2. Ward Mine - Adit Exploration
3. Ward Mine - Adit Opened During Exploration
4. Ward Mine - Adit Closure
5. Ward Mine - Adit Closure

1. Ward Mine - Spoils Deposition
2. Ward Mine - Spoils Deposition
3. Ward Mine - Lime Application
4. Ward Mine - Lime Incorporation
5. Ward Mine - Coversoil Spreading

1. Ward Mine - Fence Construction
2. Ward Mine - Fence Construction
3. Ward Mine - During Seeding & Fertilizing
4. Ward Mine - Site After Reclamation
5. Ward Mine - Site After Reclamation

1. Benjamin Hill Mine - Adit Before Construction
2. Benjamin Hill Mine - Waste Pile Before Construction
3. Benjamin Hill Mine - Waste Pile Before Construction
4. Benjamin Hill Mine - Debris Removal
5. Benjamin Hill Mine - Adit Closure

1. Benjamin Hill Mine - Filling Dug Well With Riprap
2. Benjamin Hill Mine - Lime Application/Partial
3. Benjamin Hill Mine - Coversoil Borrow & Placement
4. Benjamin Hill Mine - After Reclamation
5. Benjamin Hill Mine - After Reclamation

1. Benjamin Hill Mine - Low End After Reclamation

2. Benjamin Hill Mine - Site After Reclamation

3. Petersen Mines - Southeast Adit Before Closure

4. Petersen Mines - South Adit Before Closure

5. Petersen Mines - Main Prospect Before Construction

1. Petersen Mines - Main Prospect Adit Exploration

2. Petersen Mines - Main Prospect Shaft Exploration

3. Petersen Mines - East Adit During Closure

4. Petersen Mines - East Adit During Closure

5. Petersen Mines - Main Prospect Lime Exploration

1. Petersen Mines - Main Prospect Lime Application
2. Petersen Mines - South Prospect Closed Adit
3. Petersen Mines - Southeast Prospect Closed Adit (This adit was added to the project)
4. Petersen Mines - Main Prospect Shaft Closure After Construction
5. Petersen Mines - Main Prospect After Reclamation

1. Frank Bland - South Prospect Beginning Construction

2. Frank Bland - South Prospect Deadfall and Brush Removal

3. Frank Bland - West Adit Before Construction

4. Frank Bland - East Adit After Construction

5. Frank Bland - West Site Coversoil Salvage

1. Frank Bland - Lime Application at South Prospect

2. Frank Bland - Straw Application at West Prospect

3. Frank Bland - South Prospect After Reclamation

4. Frank Bland - West Prospect After Reclamation

5. Frank Bland - West Prospect After Reclamation

1. Frank Bland - South Prospect After Reclamation

2. Frank Bland - East Prospect After Reclamation

1. Swanson/Boyce - Before Construction at North Site

2. Swanson/Boyce - Before Construction at South Site

3. Swanson/Boyce - North Site at Road Before Construction

4. Swanson/Boyce - North Site Before Construction

5. Swanson/Boyce - Shaft Before Exploration

1. Swanson/Boyce - Shaft After Exploration
2. Swanson/Boyce - Beginning Shaft Closure
3. Swanson/Boyce - Adit Closure
4. Swanson/Boyce - Shaft Closure
5. Swanson/Boyce - Shaft Closure

1. Swanson/Boyce - Access Disturbance
2. Swanson/Boyce - South Site Ready for Lime
3. Swanson/Boyce - South Site Log Barriers
4. Swanson/Boyce - South Site Lime Incorporation
5. Swanson/Boyce - South Site Lime Incorporation

1. Swanson/Boyce - Bulk Lime Delivery
2. Swanson/Boyce - Lime Incorporation
3. Swanson/Boyce - Lime Incorporation
4. Swanson/Boyce - Lime Incorporation
5. Swanson/Boyce - Lime Incorporation

1. Swanson/Boyce - Lime Incorporation at North Site

2. Swanson/Boyce - Stripping Coversoil at North Site to Re-lime

3. Swanson/Boyce - Lime Incorporation

4. Swanson/Boyce - Spoils Condition

5. Swanson/Boyce - Limed Spoils at South Site

1. Swanson/Boyce - Coversoil Borrow Area
2. Swanson/Boyce - Regraded Coversoil Borrow Area
3. Swanson/Boyce - Road Signs
4. Swanson/Boyce - Coversoil Borrow
5. Swanson/Boyce - Coversoil Spread at North Site

1. Swanson/Boyce - Lime Incorporated North Site
2. Swanson/Boyce - Sod Placement South Site
3. Swanson/Boyce - Sod, Riprap, & Log Barriers at South Site
4. Swanson/Boyce - Sod Placement at South Site
5. Swanson/Boyce - Sod Placement at South Site

1. Swanson/Boyce - Sod "Thickspike Wheatgrass"
2. Swanson/Boyce - Sod thickness
3. Swanson/Boyce - Broken Sod Rolls
4. Swanson/Boyce - Sod "Thickspike Wheatgrass"
5. Swanson/Boyce - South Site Sod Placement

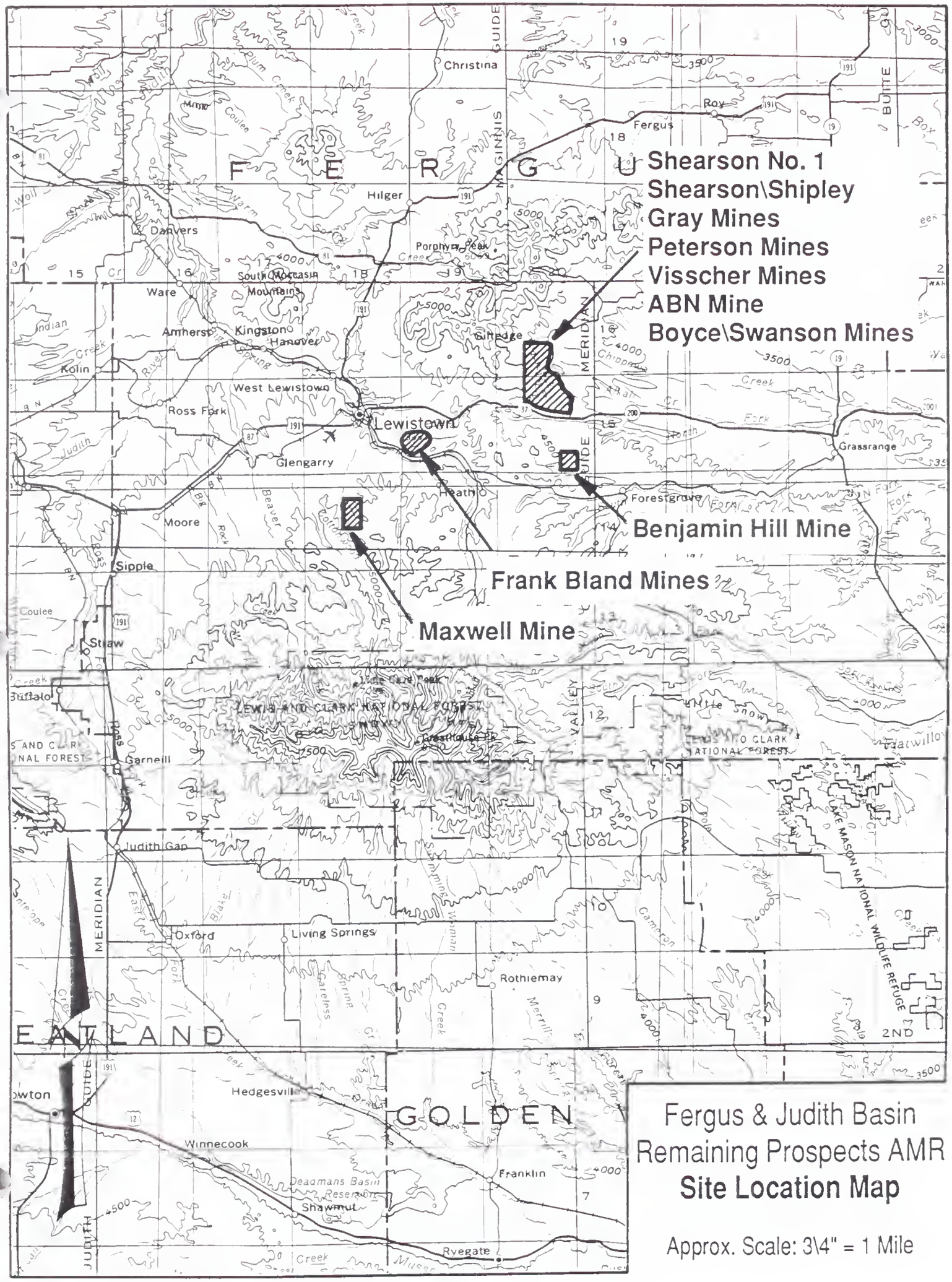
1. Swanson/Boyce - Sod "Sheep Fescue"
2. Swanson/Boyce - Sod "Sheep Fescue"
3. Swanson/Boyce - Sod "Thickspike Wheatgrass" Foreground, "Sheep Fescue" Behind
4. Swanson/Boyce - Sod "Sheep Fescue"
5. Swanson/Boyce - Sod "Thickspike Wheatgrass"

1. Swanson/Boyce - Sod "Sheep Fescue"
2. Swanson/Boyce - Sod Frozen & Broken into Small Pieces
3. Swanson/Boyce - Mulch Crimping at Coversoil Borrow Area
4. Swanson/Boyce - Mulch Crimping at Coversoil Borrow Area
5. Swanson/Boyce - Mulch Crimping on Access Road

1. Swanson/Boyce - Crimped Straw Mulch at Access to South Site
2. Swanson/Boyce - Lime Incorporation at Deposition Area (also coversoil)
3. Swanson/Boyce - Water Application
4. Swanson/Boyce - Water Application
5. Swanson/Boyce - Water Application

APPENDIX A

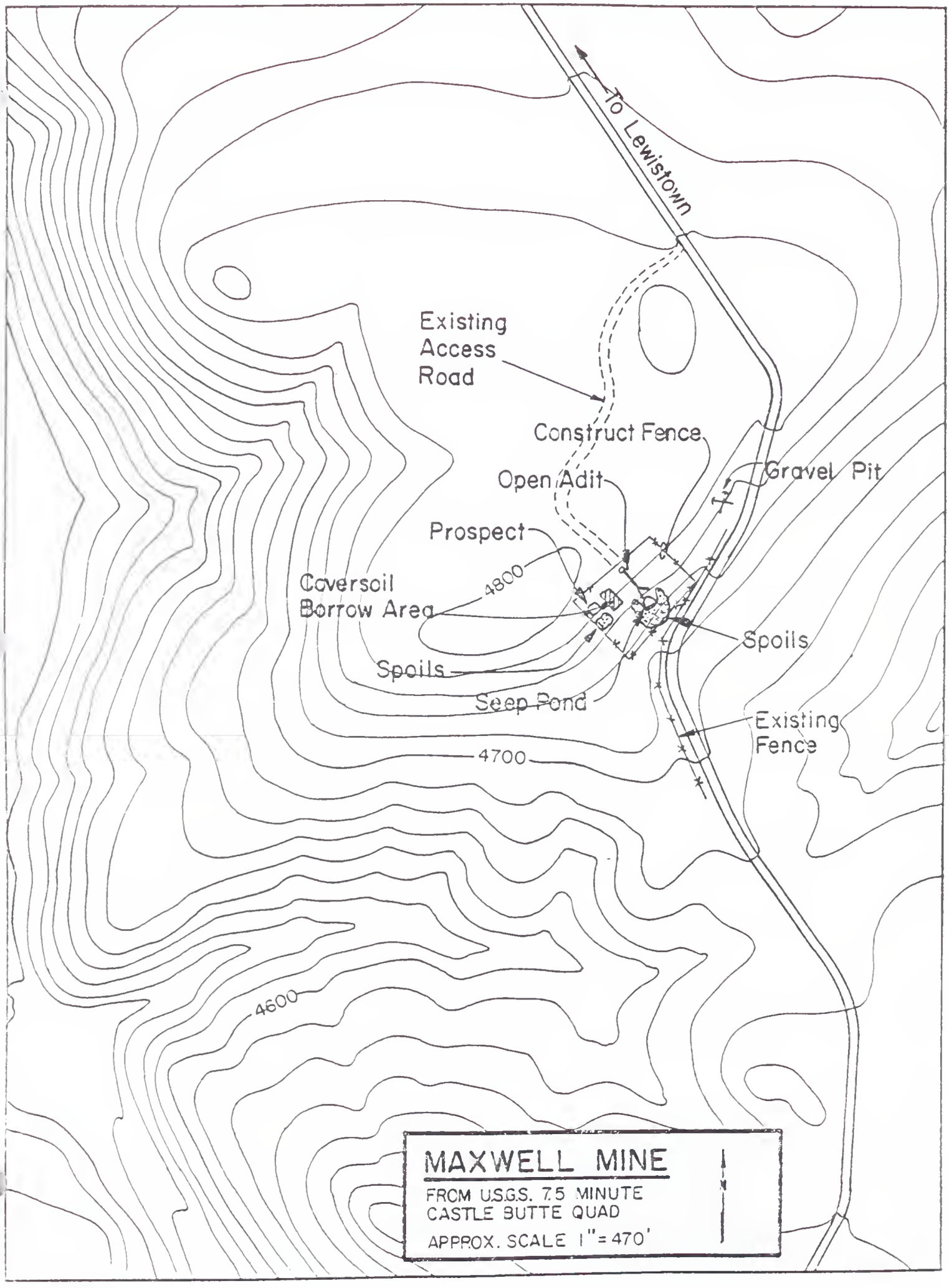
Site Location Maps and Individual Site Maps

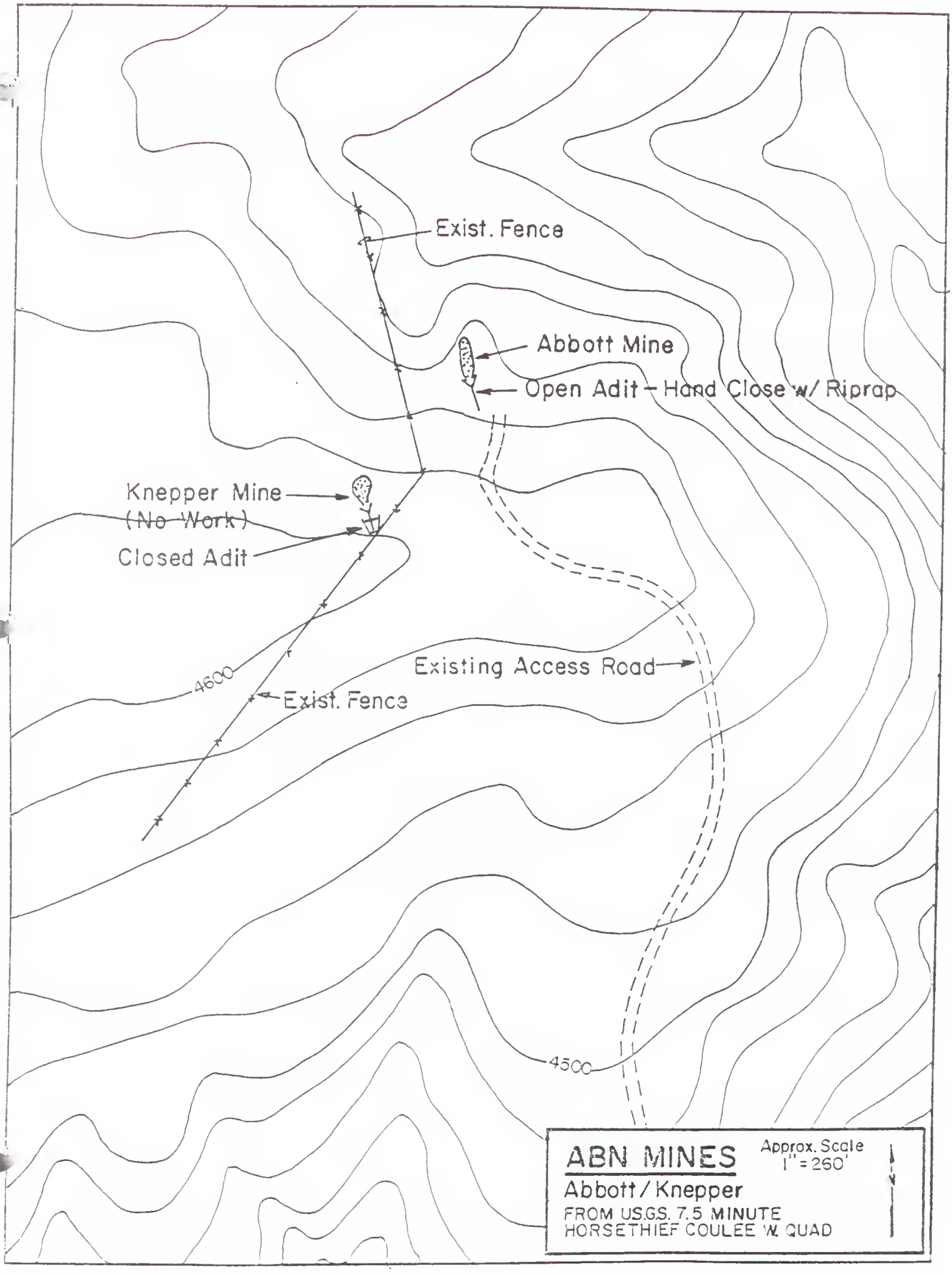


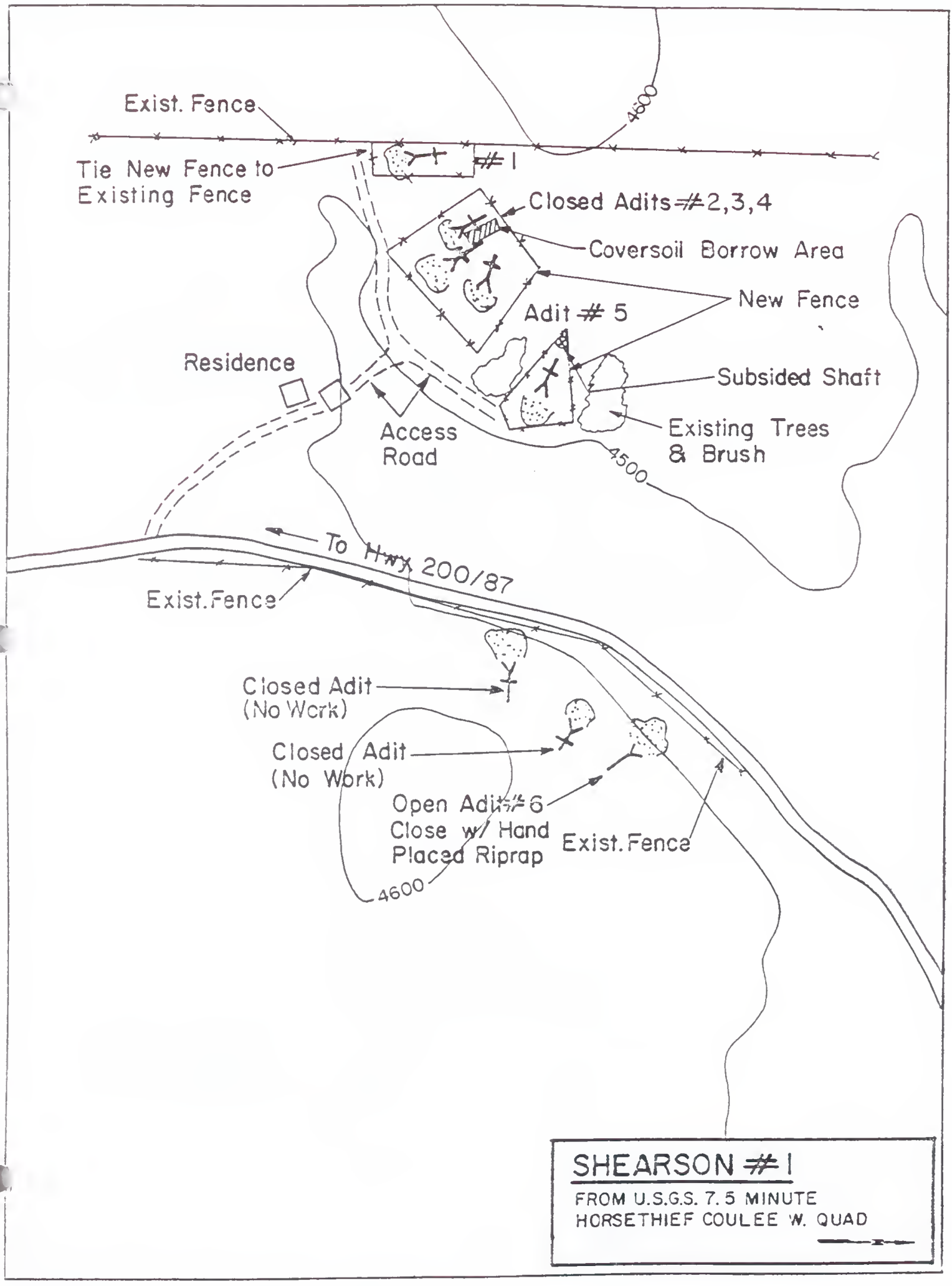
Fergus & Judith Basin
Remaining Prospects AMR
Site Location Map

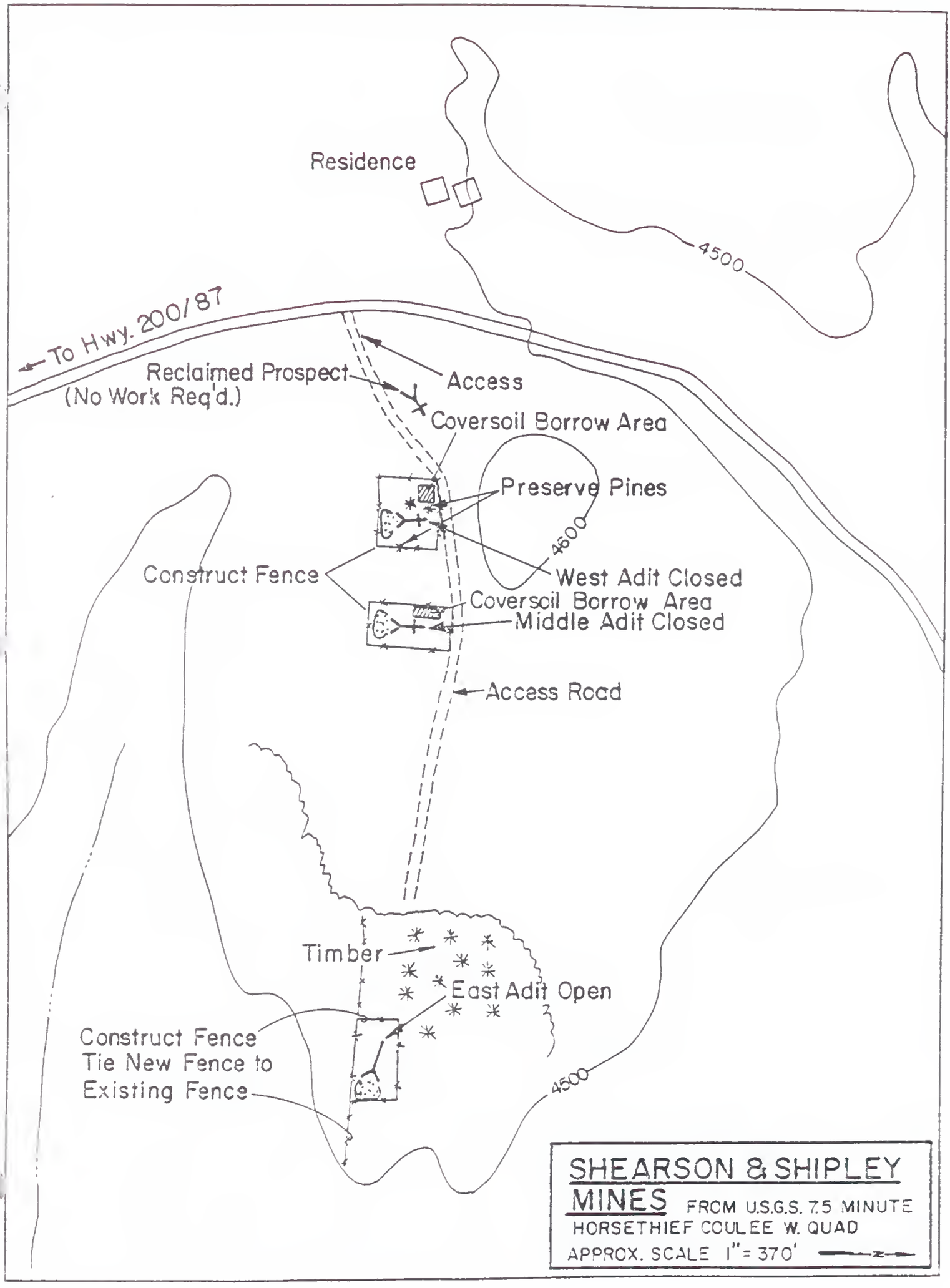
Approx. Scale: 3\4" = 1 Mile

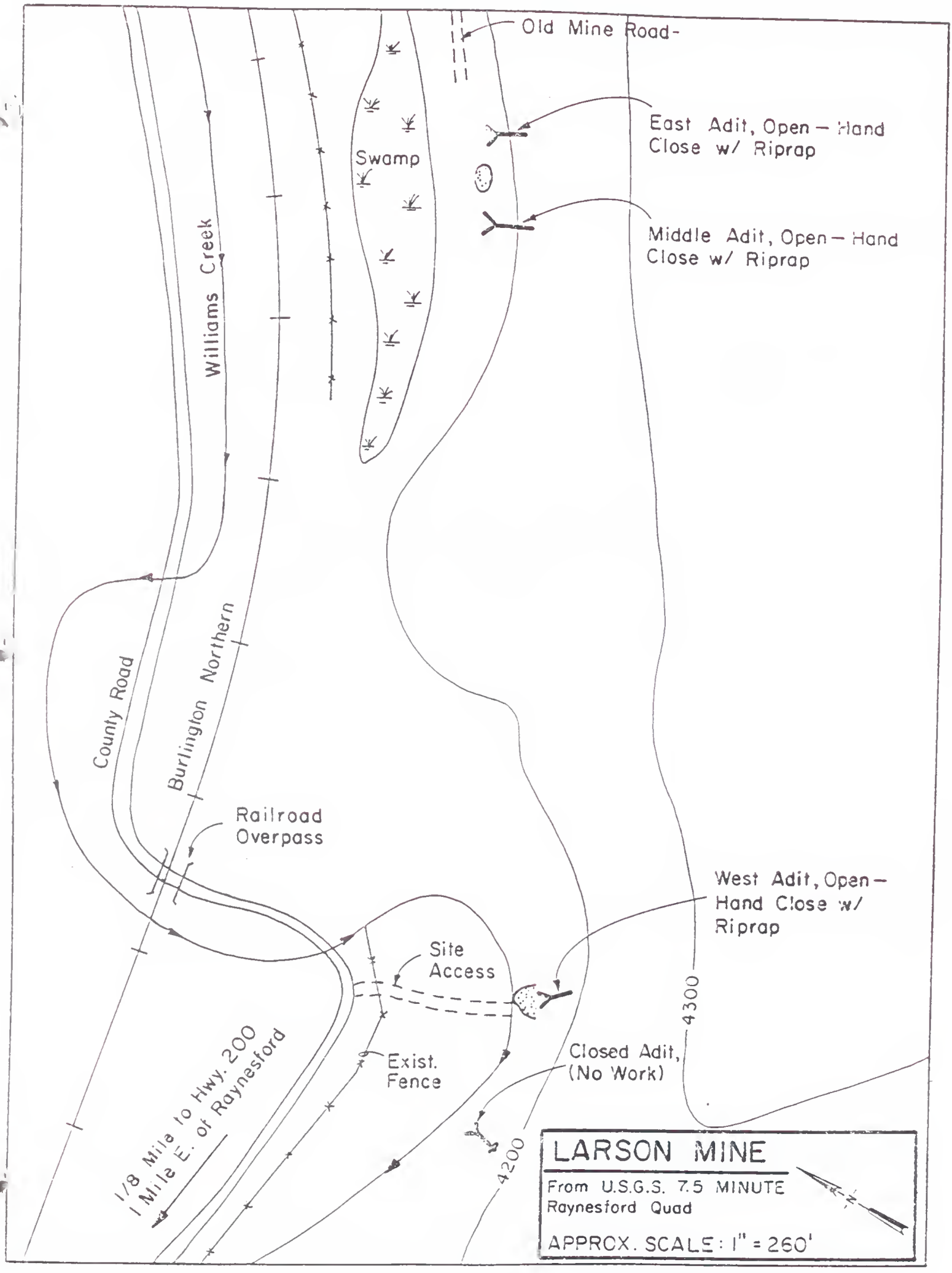

Larson Mines
Ward Mine
STANDARD PARALLEL
LEWIS AND CLARK NATIONAL FOREST
MALMSTROM AFB
Salem
Waltham
Highwood
Shepherd Butte
North Peak
Square Butte
Square Butte
Round Butte
Highwood Baldy
Tracy
Sand Coulee
Centerville
Stockett
Belt
Armington
South Peak
Spion Kop
Raynesford
Geyser
Merino
Dover
Arrow Creek
Eden
Ridge
Dutch Bench
Limestone Butte
Stanford
Jager Butte
Black Butte
Deep Butte
Monarch
Baker Mtn
Granite Mtn
Hughesville
Skull Butte
Windham
Monarch Mtn
Sevenmile Mtn
Thunder Mtn
Big Baldy Mtn
Woodchuck Mtn
Woods Mtn
Neihart
Yoga Peak
Folbate Mtn
Coyote Peak
Footstool Butte
Porphyry Peak
Black Butte
Smoky Mtn
Mount Hull
Volcano Butte
White Sulphur Springs
Elk Peak
Fergus & Judith Basin
Remaining Prospects AMR
Site Location Map
Approx. Scale: 3\4" = 1 Mile

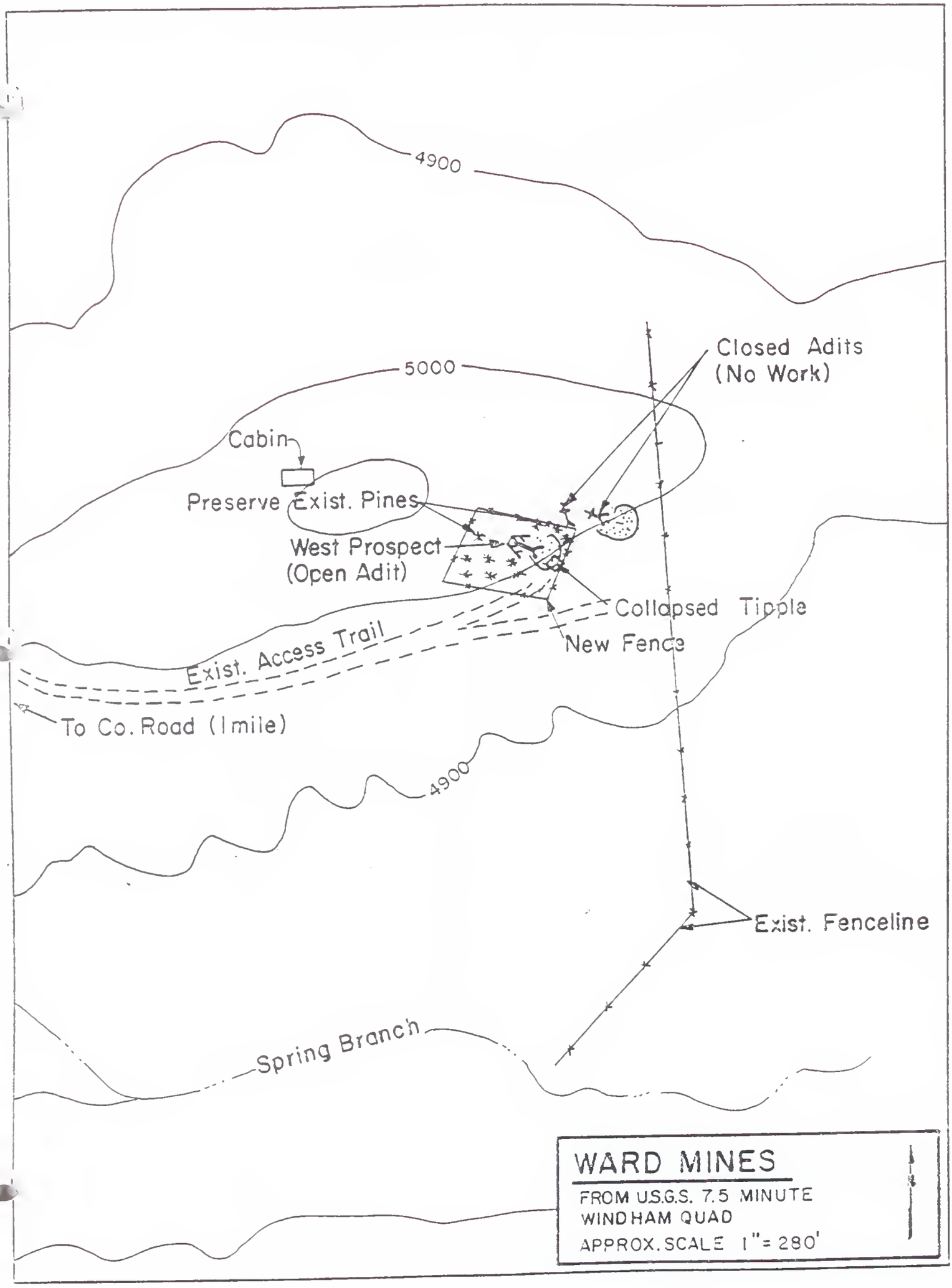

To Lewistown
Existing
Access
Road
Construct Fence
Gravel Pit
Open Adit
Prospect
4800
Coversoil
Borrow Area
Spoils
Spoils
Seep Pond
Existing
Fence
4700
4600
MAXWELL MINE
FROM U.S.G.S. 7.5 MINUTE
CASTLE BUTTE QUAD
APPROX. SCALE 1" = 470'
N

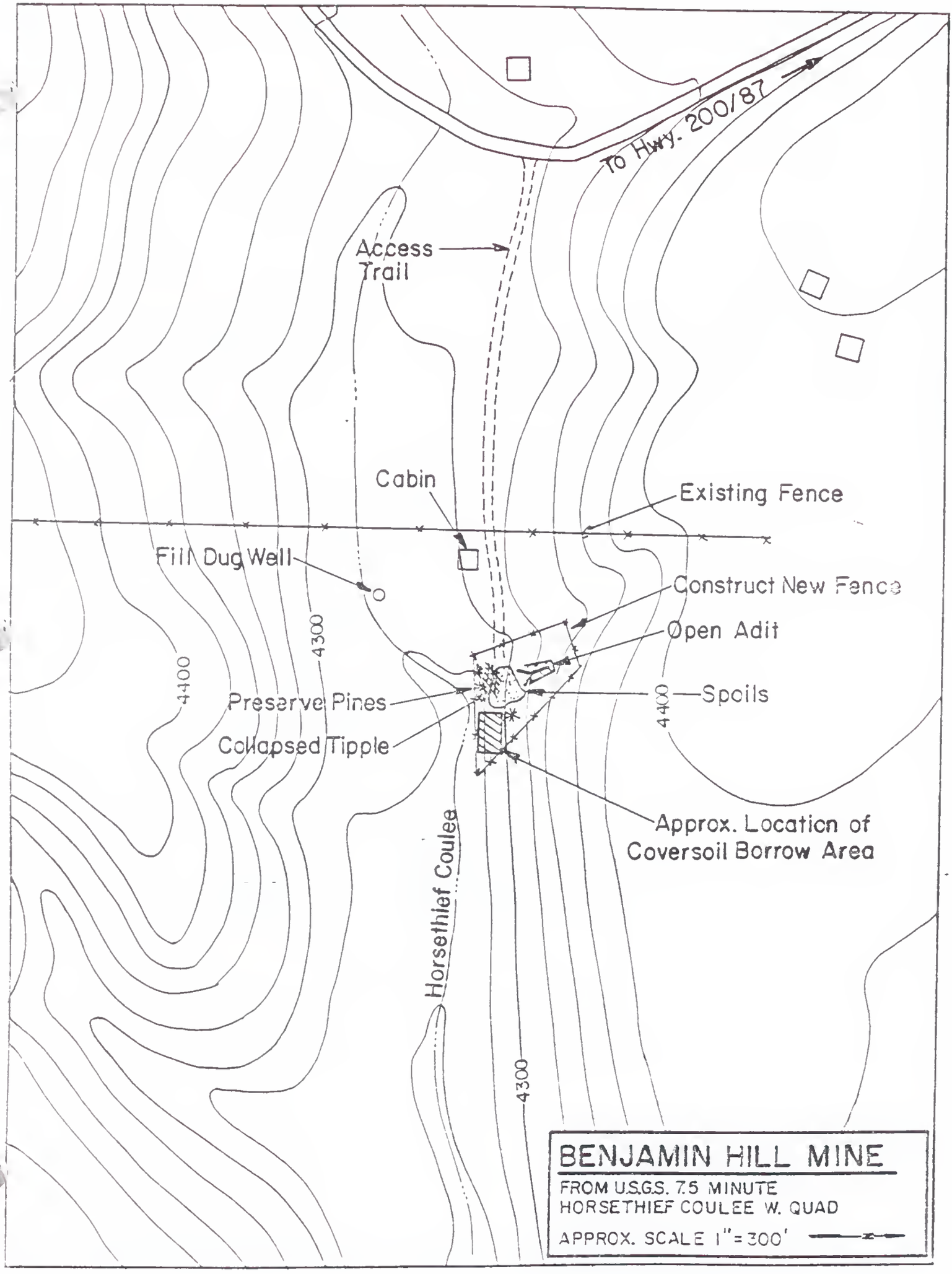

Exist. Fence
Abbott Mine
Open Adit - Hand Close w/ Riprap
Knepper Mine
(No Work)
Closed Adit
Existing Access Road
4600
Exist. Fence
4500
ABN MINES
Approx. Scale
1" = 260'
Abbott / Knepper
FROM U.S.G.S. 7.5 MINUTE
HORSETHIEF COULEE W. QUAD

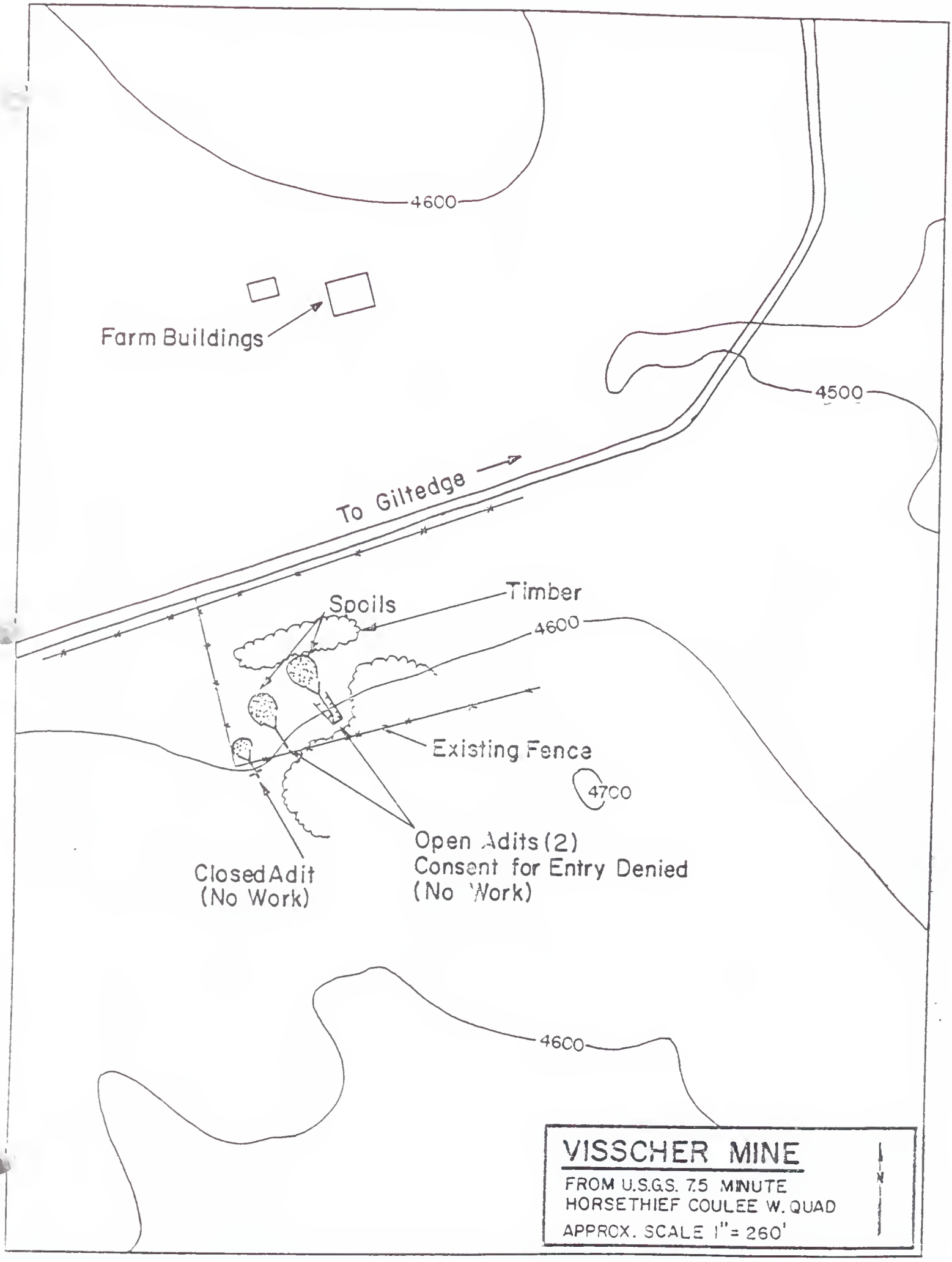

Exist. Fence
4600
Tie New Fence to
Existing Fence
#1
Closed Adits #2,3,4
Coversoil Borrow Area
New Fence
Adit # 5
Residence
Subsided Shaft
Access
Road
Existing Trees
& Brush
4500
To Hwy 200/87
Exist. Fence
Closed Adit
(No Work)
Closed Adit
(No Work)
Open Adit #6
Close w/ Hand
Placed Riprap
Exist. Fence
4600
SHEARSON #1
FROM U.S.G.S. 7.5 MINUTE
HORSETHIEF COULEE W. QUAD

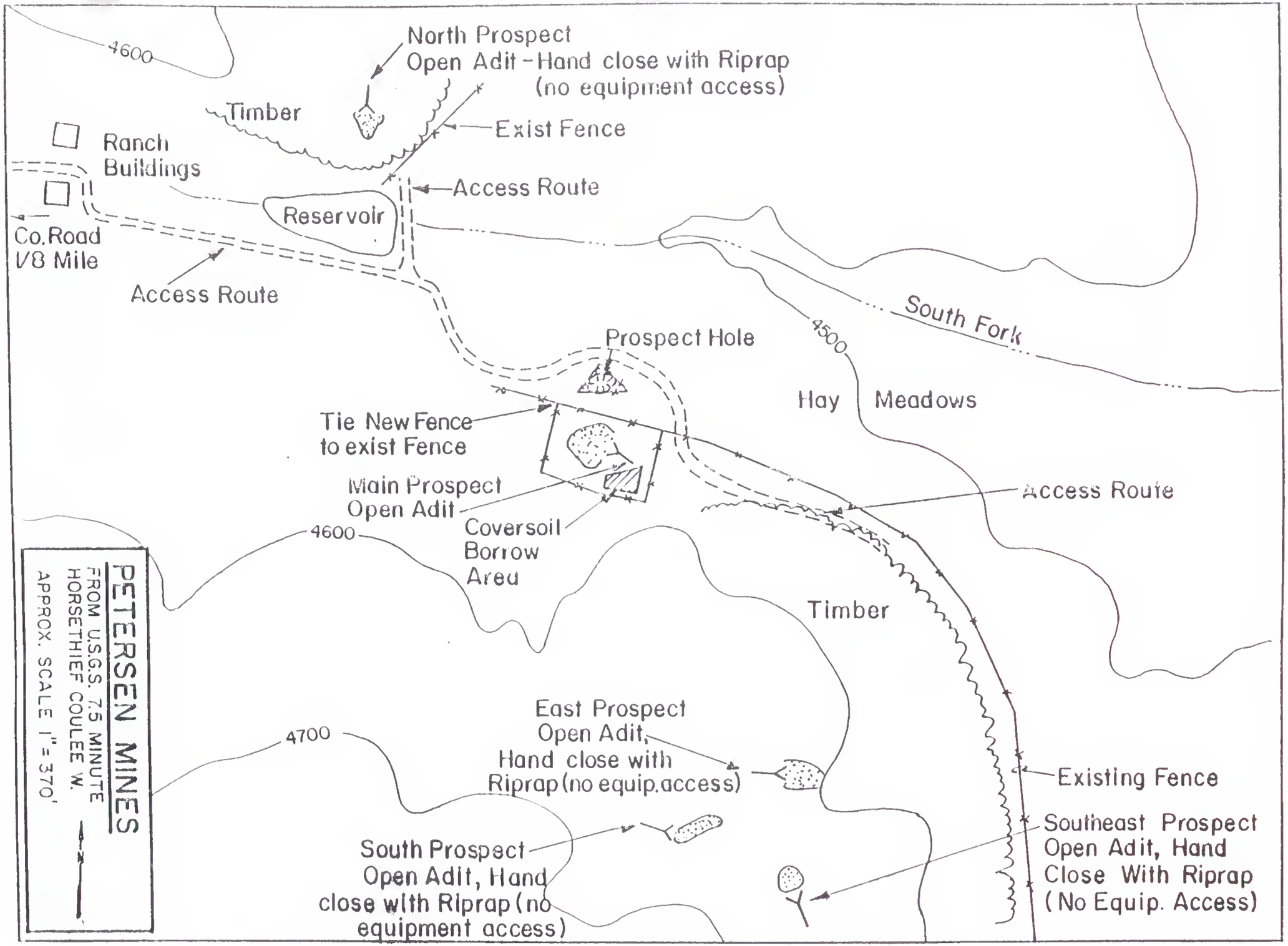

Residence
4500
To Hwy. 200/87
Reclaimed Prospect
(No Work Req'd.)
Access
Coversoil Borrow Area
Preserve Pines
4600
Construct Fence
West Adit Closed
Coversoil Borrow Area
Middle Adit Closed
Access Road
Timber
East Adit Open
Construct Fence
Tie New Fence to
Existing Fence
4500
SHEARSON & SHIPLEY
MINES FROM U.S.G.S. 7.5 MINUTE
HORSETHIEF COULEE W. QUAD
APPROX. SCALE 1" = 370'

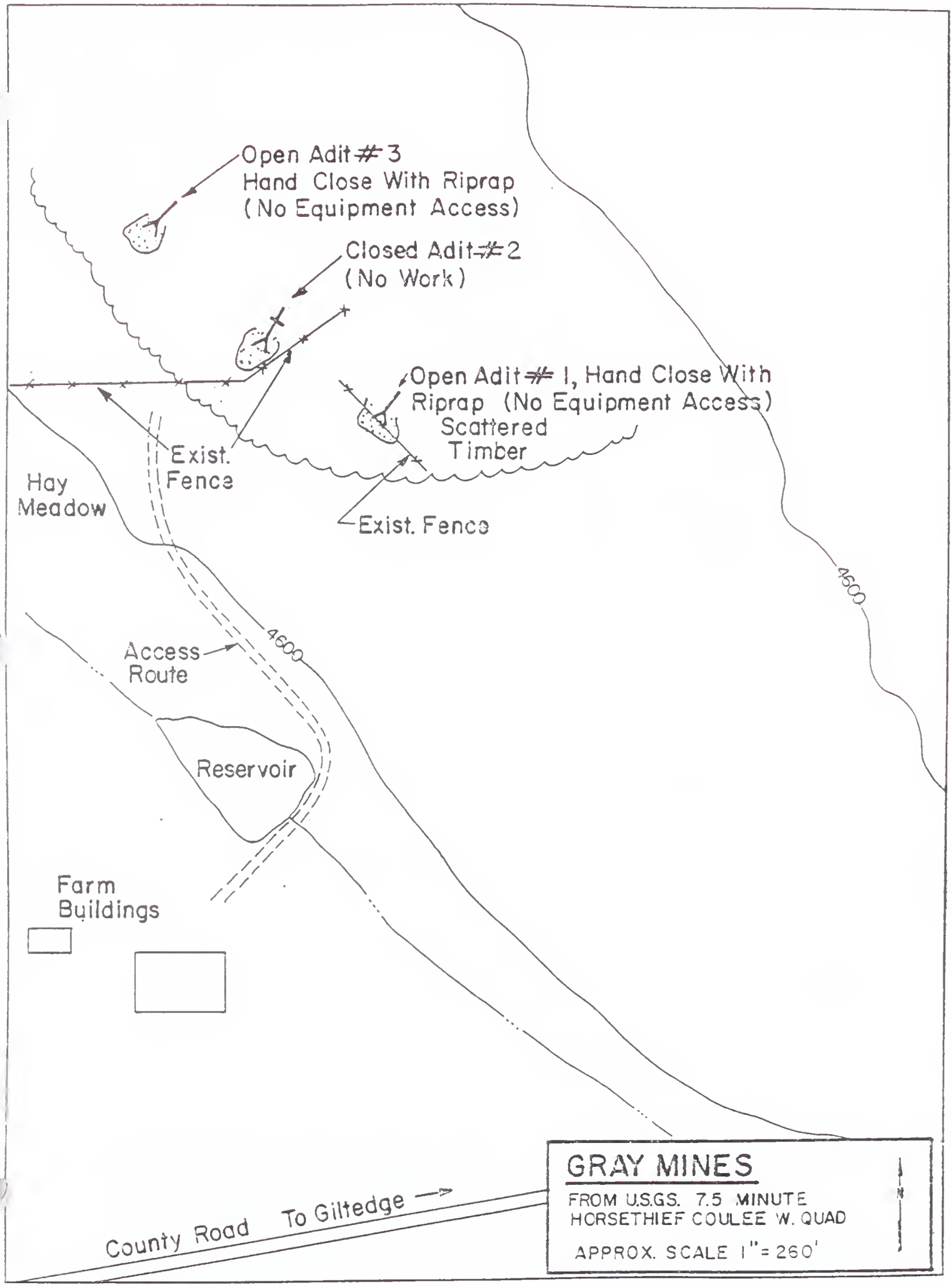

Old Mine Road
East Adit, Open – Hand Close w/ Riprap
Middle Adit, Open – Hand Close w/ Riprap
Swamp
Williams Creek
County Road
Burlington Northern
Railroad Overpass
West Adit, Open – Hand Close w/ Riprap
Site Access
Exist. Fence
Closed Adit, (No Work)
4300
4200
1/8 Mile to Hwy. 200
1 Mile E. of Raynesford
LARSON MINE
From U.S.G.S. 7.5 MINUTE Raynesford Quad
APPROX. SCALE: 1" = 260'

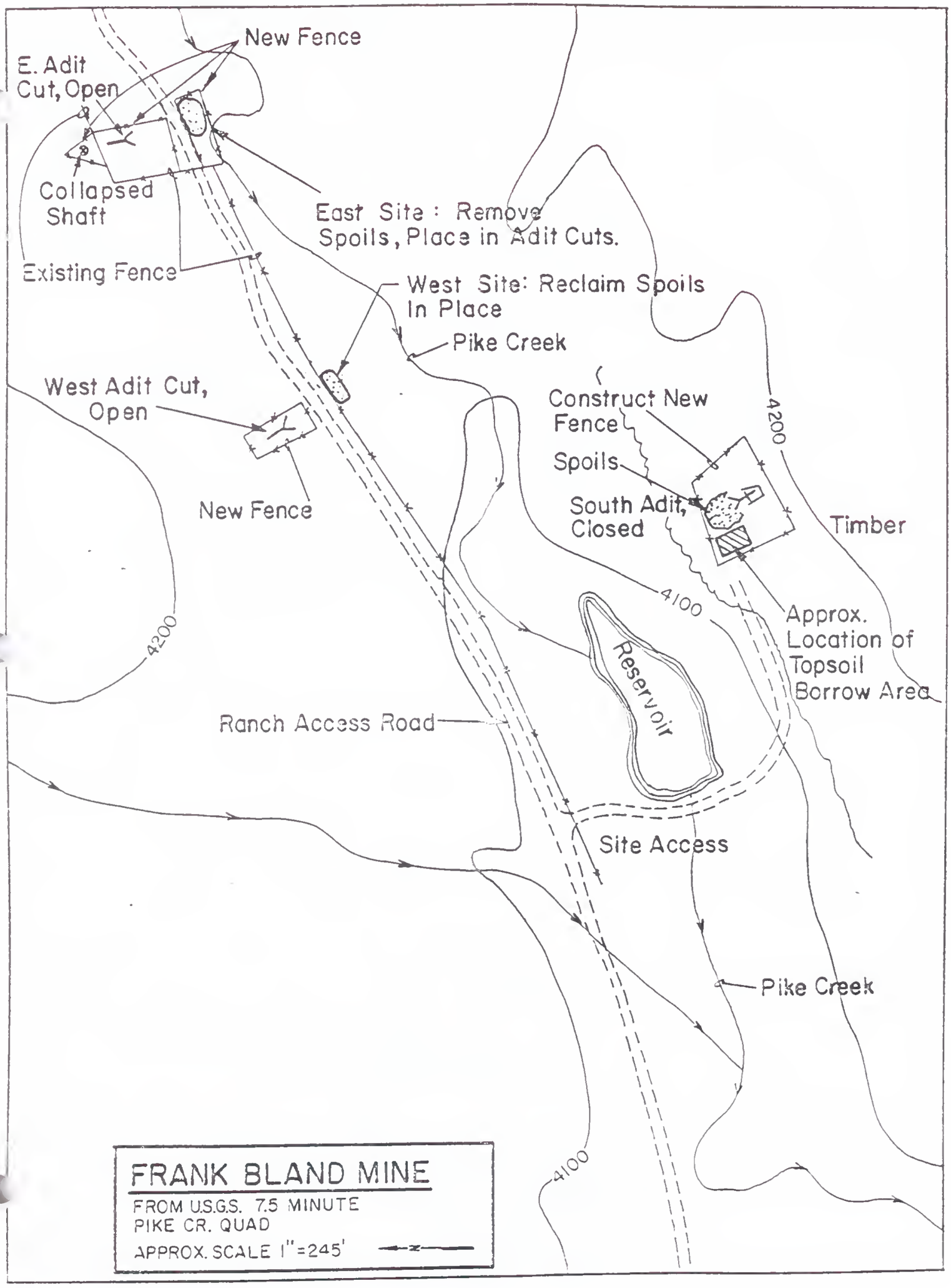

4900
5000
Closed Adits
(No Work)
Cabin
Preserve Exist. Pines
West Prospect
(Open Adit)
Collapsed Tipple
New Fence
Exist. Access Trail
To Co. Road (1 mile)
4900
Exist. Fenceline
Spring Branch
WARD MINES
FROM U.S.G.S. 7.5 MINUTE
WINDHAM QUAD
APPROX. SCALE 1" = 280'

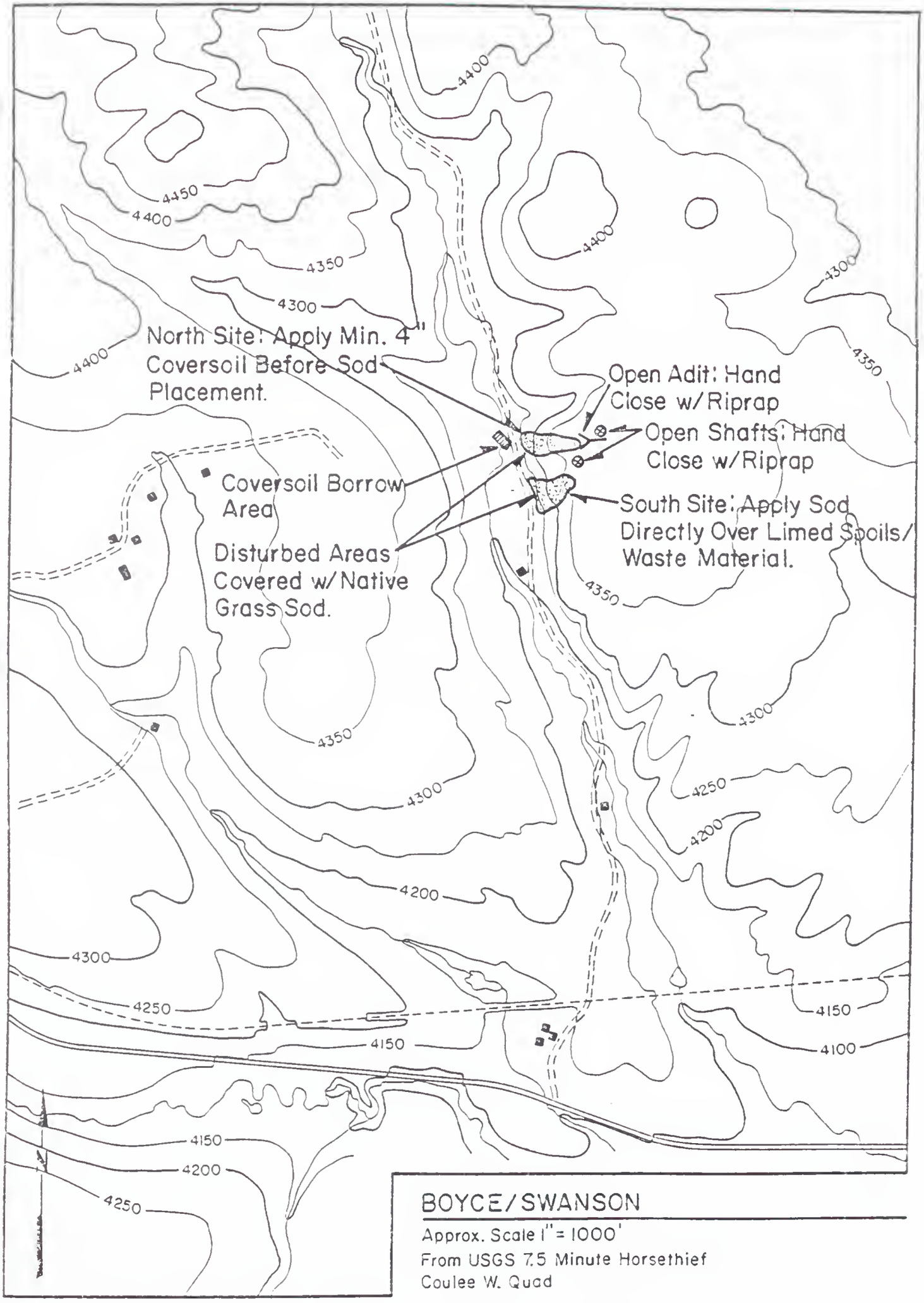

To Hwy. 200/87
Access Trail
Cabin
Existing Fence
Fill Dug Well
Construct New Fence
Open Adit
Spoils
Preserve Pines
Collapsed Tipple
Approx. Location of Coversoil Borrow Area
Horsethief Coulee
4400
4300
4400
4300
BENJAMIN HILL MINE
FROM U.S.G.S. 7.5 MINUTE
HORSETHIEF COULEE W. QUAD
APPROX. SCALE 1" = 300'


4600
Farm Buildings
4500
To Giltedge
Spoils
Timber
4600
Existing Fence
4700
Open Adits (2)
Consent for Entry Denied
(No Work)
Closed Adit
(No Work)
4600
VISSCHER MINE
FROM U.S.G.S. 7.5 MINUTE
HORSETHIEF COULEE W. QUAD
APPROX. SCALE 1" = 260'
N


PETERSEN MINES
FROM U.S.G.S. 7.5 MINUTE
HORSETHIEF COULEE W.
APPROX. SCALE 1" = 370'
4600
North Prospect
Open Adit - Hand close with Riprap
(no equipment access)
Timber
Exist Fence
Ranch
Buildings
Access Route
Reservoir
Co. Road
1/8 Mile
Access Route
South Fork
4500
Prospect Hole
Hay
Meadows
Tie New Fence
to exist Fence
Main Prospect
Open Adit
Coversoil
Borrow
Area
Access Route
4600
Timber
East Prospect
Open Adit,
Hand close with
Riprap (no equip. access)
4700
Existing Fence
Southeast Prospect
Open Adit, Hand
Close With Riprap
(No Equip. Access)
South Prospect
Open Adit, Hand
close with Riprap (no
equipment access)


Open Adit #3
Hand Close With Riprap
(No Equipment Access)
Closed Adit #2
(No Work)
Open Adit #1, Hand Close With
Riprap (No Equipment Access)
Scattered
Timber
Exist.
Fence
Hay
Meadow
Exist. Fence
4600
4600
Access
Route
Reservoir
Farm
Buildings
County Road
To Giltedge
GRAY MINES
FROM U.S.G.S. 7.5 MINUTE
HORSETHIEF COULEE W. QUAD
APPROX. SCALE 1" = 260'
N


New Fence
E. Adit
Cut, Open
Collapsed
Shaft
Existing Fence
East Site : Remove
Spoils, Place in Adit Cuts.
West Site: Reclaim Spoils
In Place
Pike Creek
West Adit Cut,
Open
New Fence
Construct New
Fence
Spoils
South Adit,
Closed
Timber
4200
4100
Approx.
Location of
Topsoil
Borrow Area
Reservoir
Ranch Access Road
Site Access
Pike Creek
FRANK BLAND MINE
FROM U.S.G.S. 7.5 MINUTE
PIKE CR. QUAD
APPROX. SCALE 1"=245'



BOYCE/SWANSON

Approx. Scale 1" = 1000'

From USGS 7.5 Minute Horsethief Coulee W. Quad

APPENDIX B

Change Orders
Work Directive #1 and #2

CHANGE ORDER

ORDER NO: 1

PROJECT TITLE: Fergus & Judith Basin Counties Remaining Prospects AMR Project

MONT A/E or DSL-AMRB: 90-006

CONTRACT DATE: July 13, 1990

OWNER: Department of State Lands, Abandoned Mine Reclamation Bureau

CONTRACTOR: Maddox Construction

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MAT'LS.	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
1.	Change in Unit Quantities Original Bid (See Attached)						($310.66)
2.	Increase in Contract Time - 37 days						N/A
3.	Boyce/Swanson Additional Work (See Itemized Listing)						$16,825.87
4.	Reduction in Lime Payment (44% of Actual)						($2,240.00)
	TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.						$14,275.21
	OVERHEAD & PROFIT @ _____%						N/A
	GRAND TOTAL - THIS CHANGE ORDER						$14,275.21

Original Contract Price	$53,439.50
Current Contract Price Adjusted by Previous Change Order	N/A
Cost this Change Order (+ or -)	$14,275.21
New Contract Price including this Change Order	$67,714.71

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decreased) by 37 calendar days.

The date for completion of all work will be 12/8/90.

Description and Justification for Change:

1. (See attached) Bid quantity adjustments to reflect actual quantities at contract prices.

2. -5 days during original contract for weather & time invested in researching and cost estimating additional work at Boyce/Swanson site.
   -2 days during Boyce/Swanson project for additional sod placement time needs due to sod size.
   -30 days during Boyce/Swanson project for weather related delays in obtaining sod from supplier.

3. (See attached) Boyce/Swanson bid quantity adjustments to reflect actual quantities at Work Directive No. 1 prices.

4. Reduction in payment for original contract Item 6. Based on lime analysis showing only 44 percent of the material passes specified gradation. See attached letter dated 11/14/90.
   Original Lime Qty. = (3.4 acres) (20 tons/acre) = 68 tons
   Actual Lime Qty. = 68 tons x 44% = 29.92 tons

   (29.92 tons/20 tons per acre) ($1,176.47) = $1,760.00

   Original bid total for lime application = $4,000.00
   Actual total for lime application = $1,760.00
   Reduction in original contract Item 6 = $2,240.00

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bonds or Bonds is hereby increased by $ 14,275.21 (100% of the Change Order amount) and the penalty of the applicable Labor and Material Bond or Bonds is hereby increased by $ 14,275.21 (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA RESIDENT AGENT

SURETY

By: _____

Seal

Recommended by: Alden L. Beard — Engineer — Date: 12-18-90

Accepted by: Mulldy Construction - Larry Mulldy — Contractor — Date: 12-28-90

Approved by: Larry Marshall — Owner — Date: 12/19/90

CHANGE IN UNIT QUANTITIES - ORIGINAL BID

Item No.	Description of Changes - Estimated Quantities & Units	Cost of Changes					Total Cost
		Mat'ls	Labor	Equip.	Misc.	Total Unit Cost	
1.	Decrease in quantity, Bid Item 4 Close Mine Openings - Adit, 1 ea. (Total of 17)					$211.11	$3,588.37
2.	Decrease in quantity, Bid Item 9 Remove & Reset Fence, 25 L.F. (Total of 250 L.F.)					$2.00	$500.00
3.	Increase in quantity, Bid Item 10 Farm Fence (Type F-4M), 761 L.F. (Total of 6561 L.F.)					$0.86	$5,642.46
4.	Increase in quantity, Bid Item 11 Farm Fence Gate, 5 ea. (Total of 14)					$77.77	$1,088.78
5.	Decrease in quantity, Bid Item 12 Fence Double Panel, 12 ea. (Total of 44)					$166.07	$7,307.08
6.	Increase in quantity, Bid Item 13 Fence Single Panel, 5 ea. (Total of 15)					$140.00	$2,100.00
7.	Increase in quantity, Bid Item 14 Fence Terminal Post, 6 ea. (Total of 12)					$33.33	$399.96

Total original bid cost for above items	$20,937.31
Actual revised cost for above items	$20,627.15
Change in actual cost for above items	(310.66)

BOYCE/SWANSON - ADDITIONAL WORK

Itemization of Quantites and Costs

Item No.	Description	Estimated Plan Quantity	Unit	Actual Quantity	Total Unit Cost	Total Cost
1.	Debris Cleanup (Mesh Netting & Timbers)	XXXX	LS	XXXX	$760.00	$760.00
2.	Excavation & Embankment (Cut Ditch @ Road & Cut Slope Back)	XXXX	LS	XXXX	$350.00	$350.00
3.	Lime Incorporation (20T/AC)	0.32	AC	0.32	$2,956.25	$946.00
4.	Sod Procurement & Placement (Staples Provided) Thickspike Wheatgrass	1,550	SY	888.39	$4.71	$4,186.67
5.	Water Application (Applied Evenly over Sod)	9,000	GAL	9,000	$0.21	$1,890.00
6.	Close Mine Opening: Adit	2	EA	1	$211.11	$211.11
7.	Close Mine Opening: Shaft	1	EA	2	$266.66	$533.32
8.	6" Rough Log Structure	320	LF	320	$5.47	$1,750.40
9.	Fertilize & Seed	0.35	AC	0.35	$357.39	$125.26
10.	Coversoil Borrow, Placement & Borrow, Site Reclamation	55	CY	30	$35.00	$1,050.00
11.	Sod Procurement & Placement (Staples Provided) Sheep Fescue	445	SY	666.66	$7.50	$4,999.95
12.	Mulch	0.1	AC	0.1	$231.58	$23.16
TOTAL:						$16,325.37

WORK DIRECTIVE CHANGE

(Instructions on Reverse Side) No. 1

PROJECT: Fergus/Judith Basin Counties Remaining Prospects AMR

DATE OF ISSUANCE: October 23, 1990

CONTRACTOR: (Name, Address) Maddox Construction Box 6877 Great Falls, MT 59406

OWNER: Montana Dept. of State Lands Contact: John Koerth

MONT A/E or DSL-AMRB: 90-006

CONTRACT FOR:

ENGINEER: Robert Peccia & Associates

You are directed to proceed promptly with the following change(s):

Description: Lime, lay sod, recontour, water, log structures, and close mine openings.

Purpose of Work Directive Change: Addition of Boyce/Swanson site to project.

Attachments: (list documents supporting change)

1. Boyce/Swanson Reclamation Work Items.

RECEIVED
OCT 26 1990
ROBERT PECCIA & ASSOCIATES

If a claim is made that the above change(s) have affected Contract Price (Change Order based thereon will involve one of the following methods change(s).

Method of determining change in Contract Price:

- [ ] Time and Materials
- [x] Unit Prices
- [ ] Cost Plus Fixed Fee
- [x] Other Lump sum items.

Method of determining

- [ ] Contractor's
- [x] Engineer's F
- [ ] Other ____

Estimated increase (~~decrease~~) in Contract Price: $13,813.04. If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (~~decrease~~) in Contract Time: 14 days. If the change involves an increase, the estimated time is not to be exceeded without further authorization.

ROBERT PECCIA & ASSOCIATES, INC.

RECOMMENDED:

By Robert B Morton
Engineer

MONTANA DEPT. OF STATE LANDS

AUTHORIZED:

By Susan McGinnally
Owner

ACCEPTED: MADDOX CONSTRUCTION

By Merlin Conrad Perry Maddox
Contractor

Rev. 7/90

BOYCE/SWANSON RECLAMATION WORK ITEMS*

Item No.	Est. Qty.	Unit	Description	Unit Price	Total Price
1.	1	LS	Debris Cleanup (Mesh Netting & Timbers)	XXXX	$ 760.00
2.	1	LS	Excavation & Embankment (Cut Ditch at Road & Cut Slope Back)	XXXX	350.00
3.	.32	AC	Lime Incorporation (20 T/AC)	$2,956.25	946.00
4.	1,550	SY	Sod Procurement & Placement (Staples Provided)	4.71	7,300.50
7.	9,000	GAL	Water Application (Applied Evenly over Sod Covered Sites)	0.21	1,890.00
6.	2	EA	Close Mine Opening: Adit	211.11	422.22
7.	1	EA	Close Mine Opening: Shaft	266.66	266.66
8.	320	LF	6" Rough Log Structure	5.47	1,750.40
9.	.35	AC	Fertilize and Seed	357.89	125.26
TOTAL:					$13,811.04

* Prices agreed upon on 10/23/90 per phone conversation between Mel Aamold and Bob Morton.

WORK DIRECTIVE CHANGE

(Instructions on Reverse Side) No. 2

PROJECT: Fergus/Judith Basin Counties Remaining Prospects AMR

DATE OF ISSUANCE: December 3, 1990

CONTRACTOR: (Name, Address) Maddox Construction Box 6877 Great Falls, MT 59406

OWNER: Montana Dept. of State Lands, Abandoned Mine Reclamation Bureau Contact: John Koerth

MONT A/E or DSL-AMRB: 90-006

CONTRACT FOR:

ENGINEER: Robert Peccia & Associates

You are directed to proceed promptly with the following change(s):

Description: Lay the shipped load of small pieces of sod. Small pieces load is approx. 445 sy. Original cost $4.71/sy, revised cost $7.50/sy: $4.71 - $7.50 = $2.79; $2.79 x 445 sy = $1241.55 additional.

Purpose of Work Directive Change: One shipped load of sod is in smaller pieces than anticipated and requires change in unit price. This work directive approves cost increase.

Attachments: (list documents supporting change) None.

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

- [ ] Time and Materials
- [x] Unit Prices
- [ ] Cost Plus Fixed Fee
- [ ] Other _____

Estimated increase ~~decrease~~ in Contract Price: $ 1241.55. If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Method of determining change in Contract Time:

- [ ] Contractor's Records
- [x] Engineer's Records
- [ ] Other _____

Estimated increase (~~decrease~~) in Contract Time: 2 days. If the change involves an increase, the estimated time is not to be exceeded without further authorization.

RECOMMENDED: ROBERT PECCIA & ASSOCIATES

By Robert B Morton
Engineer

AUTHORIZED: MONTANA DEPT. OF STATE LANDS

By Susan M Cheally
Owner

ACCEPTED: MADDOX CONSTRUCTION

By _____
Contractor

Rev. 7/90

APPENDIX C

Certificate of Substantial Completion

RECEIVED

JAN 29 1991

ROBERT PECCIA & ASSOCIATES

CERTIFICATE OF SUBSTANTIAL COMPLETION

TO: DSL-AMRB OWNER

PROJECT TITLE: Fergus/Judith Basin Remaining Prospects AMR Project

MONT A/E or DSL-AMRB: 90-006

CONTRACT DATE: 7/31/90

LOCATION: Fergus & Judith Basin Counties, Montana

PROJECT OR PART SHALL INCLUDE: Eleven individual abandoned coal mine reclamation sites

CONTRACTOR: Maddox Construction

ADDRESS: P.O. Box 6877 Great Falls, MT 59406

TELEPHONE NO: 406/771-7410

SUBSTANTIAL COMPLETION DATE: 12/8/90

DSL INSPECTION DATE: 11/2/90 & 12/8/90

ENGINEER: Robert Peccia & Associates

PERFORMANCE BOND NO: B140308

DATE OF BOND: 6/21/90

SURETY: MCA Insurance Company

MONTANA AGENT: Lorrin A. Darby Cogswell Agency

ADDRESS: 484 Central Ave. Newark, NJ 07107

The Work performed under this Contract has been inspected by authorized representatives of the Owner, Contractor, and Engineer, and the Project (or specified part of the Project, as indicated above) is hereby declared to be substantially completed on the above date.

DEFINITION OF SUBSTANTIAL COMPLETION

The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed, in accordance with the contract documents, as modified by any change orders agreed to by the parties, so the Owner can occupy or utilize the project or specified area of the project for the use for which it was intended.

A tentative list of items to be completed is appended hereto. This list may not be exhaustive, and the failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents.

ENGINEER: Robert Peccia & Associates

By [signature] 1-11-91
Authorized Representative Date

The Contractor accepts the above Certificate of Substantial Completion and agrees to complete and correct the items on the tentative list within the time indicated.

CONTRACTOR: Maddox Roofing & Construction

By [signature] 1-15-91
Authorized Representative Date

The Owner accepts the Project or specified area of the Project as substantially complete and will assume full possession of the project or specified area at 6pm (time), on 12/8/90 (date). The responsibility for heat, utilities, security, and insurance under the Contract Documents shall be as set forth under "Remarks" below.

OWNER: State of Montana, DSL-AMRB

By [signature] 1/25/91
Authorized Representative Date

Remarks: (Attach additional sheet, if necessary)

Rev. 7/90